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ANIMATION UNCOVERED

LOVE DEATH + ROBOTS CG

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Netflix's NSFW anthology



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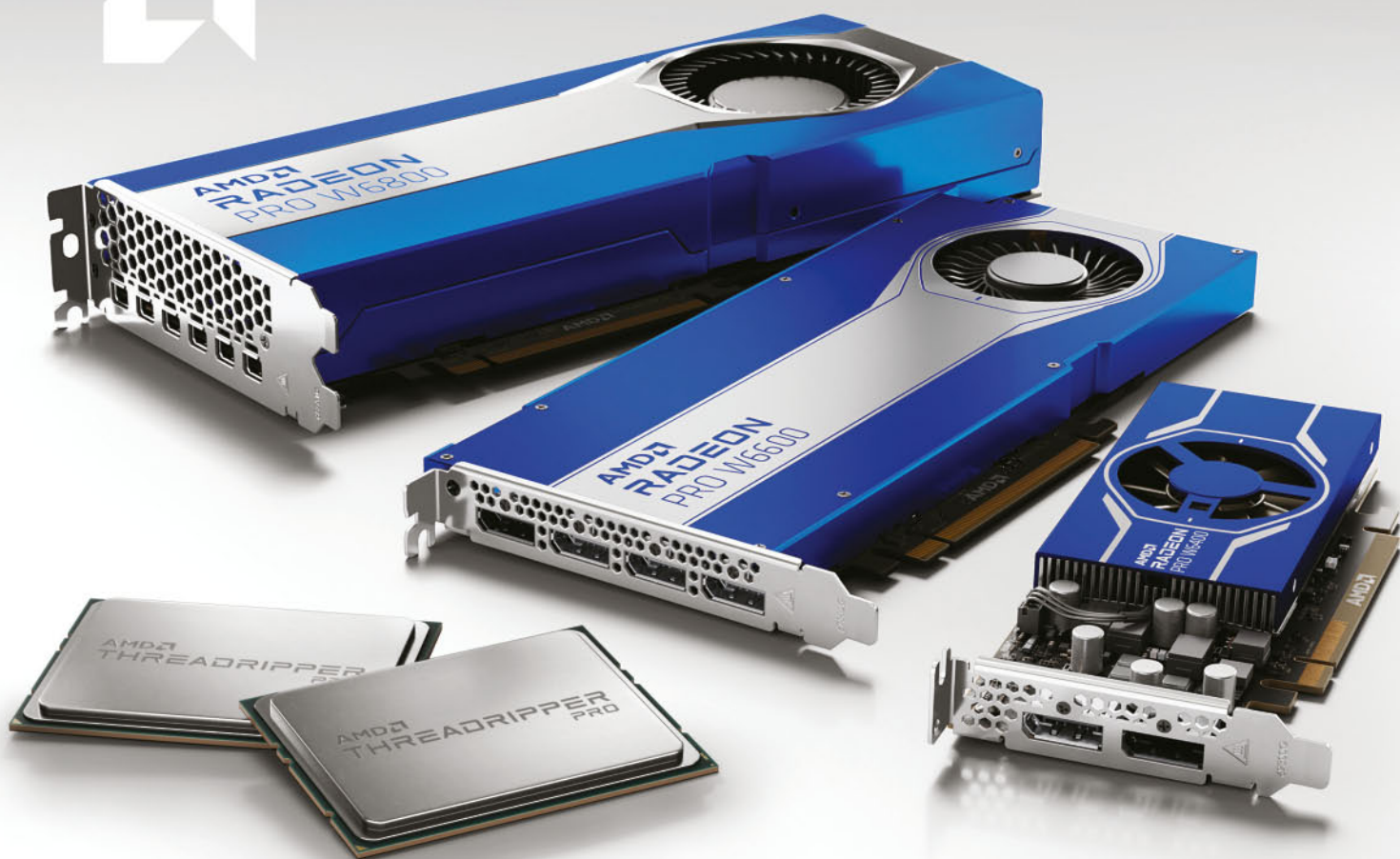
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WELCOME

Love, Death + Robots has become something of a sensation on Netflix, with varied animation styles driving narrative from the comedic to the thought provoking. In this issue we delve behind the scenes of some of these awe-inspiring shorts to discover how they were put together.

Moving to the big screen we explore the making of *The Bad Guys* animated CG feature, as well as the VFX of *Uncharted*.

We have somewhat of a bumper issue for new tech too, with reviews of the latest from Blender, Cinema 4D, Corona and Unreal Engine.

Then there's a host of training covering Cinema 4D dynamics, Dreams scene creation and much more. I hope you enjoy the issue.

Rob

Rob Redman, Editor
rob.redman@futurenet.com



COVER ART
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IMAGINE IF A MANGA CAME TO LIFE AND WHAT IT WOULD LOOK LIKE; THAT'S *THE BAD GUYS*





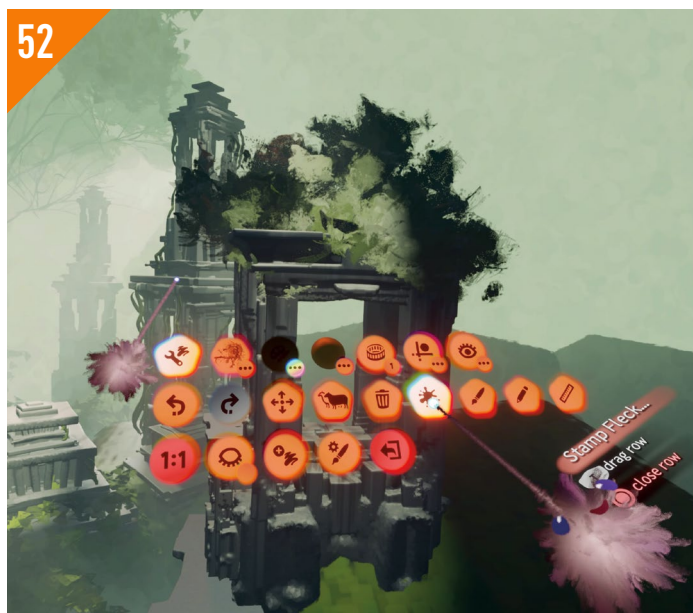
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The Gallery

The best digital art from
the CG community

STYLISED NASA NAIL GUN

Original concept by Colin Geller
(artstation.com/artwork/ZePYrR)



ARTIST

Joseph Burgos

SOFTWARE

Maya, Marmoset Toolbag 4,
RizomUV, Substance Painter

“I often spend time on ArtStation admiring weapon designs. After stumbling across this amazing design from Colin Geller, I started to imagine different ways I could bring it to life, in both model and animation. I find that changing my styles of work help me think of new ways to tackle problems. For that reason, I chose this project to be stylised and using only a SubD workflow. When blocking this out, I played around with animations using first-person arms I found online. This really helped me consider how this weapon would function as well as how this game-ready asset will feel for the player!”

● joseph-burgos.artstation.com





Check out the whole process
on my YouTube channel:
[www.youtube.com/c/
Mahmoudsalahxyz](http://www.youtube.com/c/Mahmoudsalahxyz)





ANWAR SADAT



ARTIST

Mahmoud Salah

SOFTWARE

ZBrush, Maya, Substance
Painter, XGen, Arnold

“The plan was to stream my entire process of making a realistic portrait. While thinking about a subject, we were in October, in which we celebrate a national occasion. So, I went with a portrait of Anwar Sadat, our leader during the hard times we went through in the 70s. I chose to create a tribute to him, and to my father who did the cover art for *October* magazine in 1977 before computers, using a mix of manual work and mechanical technics.

45 years later I'm using the latest technology to produce this 3D recreation. From 3D Scan Store I used a senior Caucasian male head, wrapped it on my DynaMesh sculpt in ZBrush, and worked in Substance Painter for texture, Maya for rendering and scene assembling, and XGen for the hair and cloth fuzz.

As for the ornaments on the outfit, I started by drawing in Photoshop as black and white masks to later use in ZBrush. I used ZRemesher to get clean topology then give it thickness, plus a mix of CurveTube brush work.”

● artstation.com/salah-cg



ARTIST

Aymeric Bagès

SOFTWARE

3ds Max, Substance
Painter, ZBrush,
Nuke, V-Ray,
Ornatrix

DIA DE LOS MUERTOS

Original concept by Nicolas Bara
(bit.ly/3yWqCtM)

■ As soon as I saw the concept by artist Nicolas Bara, I immediately loved it. His expression reminded me of a film from my childhood, *The Mask*. This project allowed me to use all the software I learnt these past few years while bringing my own artistic touch.

Working on this project in 3D was a challenge, both in terms of the asymmetry of the silhouette and also having a dynamic posing from all angles, while remaining faithful to Nicolas Bara's concept.

The Nuke software allowed me to go further in the finalisation of my project by offering two very different atmospheres, and quickly – something that I could do less easily with Photoshop. ■■

● artstation.com/aymericbages



HOPE AND HOMES FOR CHILDREN



URGENT APPEAL



Russia's brutal invasion of Ukraine is not just a humanitarian crisis for the Ukrainian people; it's a child protection emergency.

Up to 100,000 children warehoused in Ukraine's vast orphanage system – a network of over 700 buildings – risk being forgotten. Left to face the dangers of war alone as staff flee. As families are torn apart or forced from their homes, many more children are at risk of being separated from the love and protection they desperately need. Worse still, they are at risk of trafficking, or being placed in overcrowded, understaffed and poorly resourced orphanages in border countries.

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HOPE AND HOMES FOR CHILDREN



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SYMBIOSIS

MULTIBODY CREATURE



ARTIST

Roberto Digiglio

SOFTWARE

ZBrush, Substance Painter,
KeyShot, Photoshop

■ ■ This creature, which I designed for the Symbiosis project (www.symbiosis.show), is made up of three perfectly autonomous organisms that merge together for reproductive purposes.

The inspiration comes from the anglerfish: the male anglerfish is much smaller than the female and when he spots his partner, it bites her on the belly, releases an enzyme that dissolves the surrounding skin and begins the fusion of the circulatory systems, thus transforming into an appendix equipped with testicles that allows reproduction.

I sculpted this creature in ZBrush and painted it in Substance Painter, so focused on its final rendering – I wanted it to look translucent like a mollusc, but at the same time feel leathery. To do this I used KeyShot's Dielectric material and played with masks to define the subsurface scattering areas. ■ ■

● artstation.com/voilola



I USED DIELECTRIC MATERIAL
AND PLAYED WITH MASKS TO
DEFINE THE SUBSURFACE
SCATTERING AREAS





BANSHEE



ARTIST
Robin Isola
SOFTWARE
ZBrush, Maya, Arnold,
Marvelous Designer

“With this project, I wanted to challenge my ability to design a fully original character, partially inspired by the folklore of the banshee and its depictions in fiction. Only with a touch of the fantastic, and a pinch of horror.

I went with a very streamlined workflow, doing most of the

sculpting, modelling, texturing and detailing in ZBrush, and the lookdev, groom and lighting with XGen/Maya. The challenge was bringing all of my hand-painted texturing into a few inches of photorealism without going all the way in, to keep the slightly stylised feel to the piece.”

● artstation.com/isolart



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IRON GARDEN



ARTIST
Tobias Roetsch
SOFTWARE
Blender 3.0,
Photoshop

After having done several cyberpunk-themed images for clients, it was about time to create something only for me and take it as a chance to dive deeper into Blender. I wanted to explore what Random Flow (a must-have Blender plugin for sci-fi artists) as well as scattering with the help of geometry nodes can do to speed up the workflow for city scenes. The scattering especially helped with the trees as well as the second floor below the main buildings to add a lot of details instantly. Final touches like the fog/clouds as well as more lights and colour adjustments have been added in Photoshop at the end. The piece was inspired by the art of Brandon Gobey.

● www.gtgraphics.de



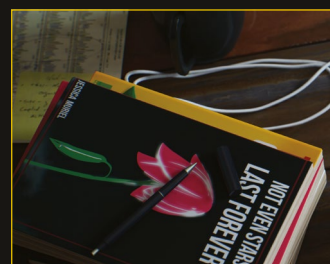
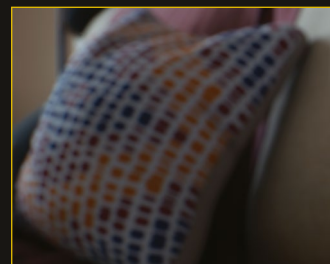


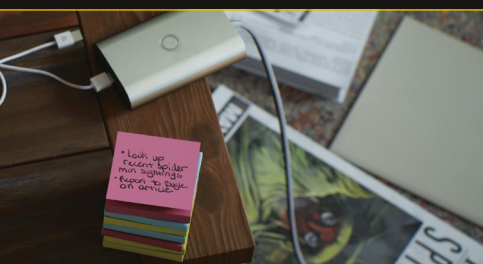
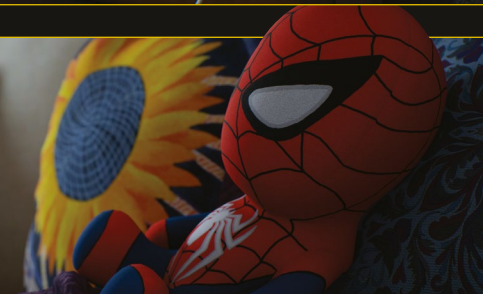
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WHAT THE RANDOM FLOW
PLUGIN COULD DO TO
SPEED UP THE WORKFLOW
FOR CITY SCENES



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MJ'S APARTMENT

SOFTWARE Maya, ZBrush, Substance Painter, Photoshop, Unreal Engine 4, Marmoset Toolbag, After Effects **YEAR CREATED** 2022

MJ's Apartment was created in four months during my Advanced Term at Think Tank Training Centre. I was responsible for all aspects of the project and rendered it in real time using Unreal Engine 4. This project helped to test my skills at managing a very dense scene while keeping all assets at a consistent level of quality.

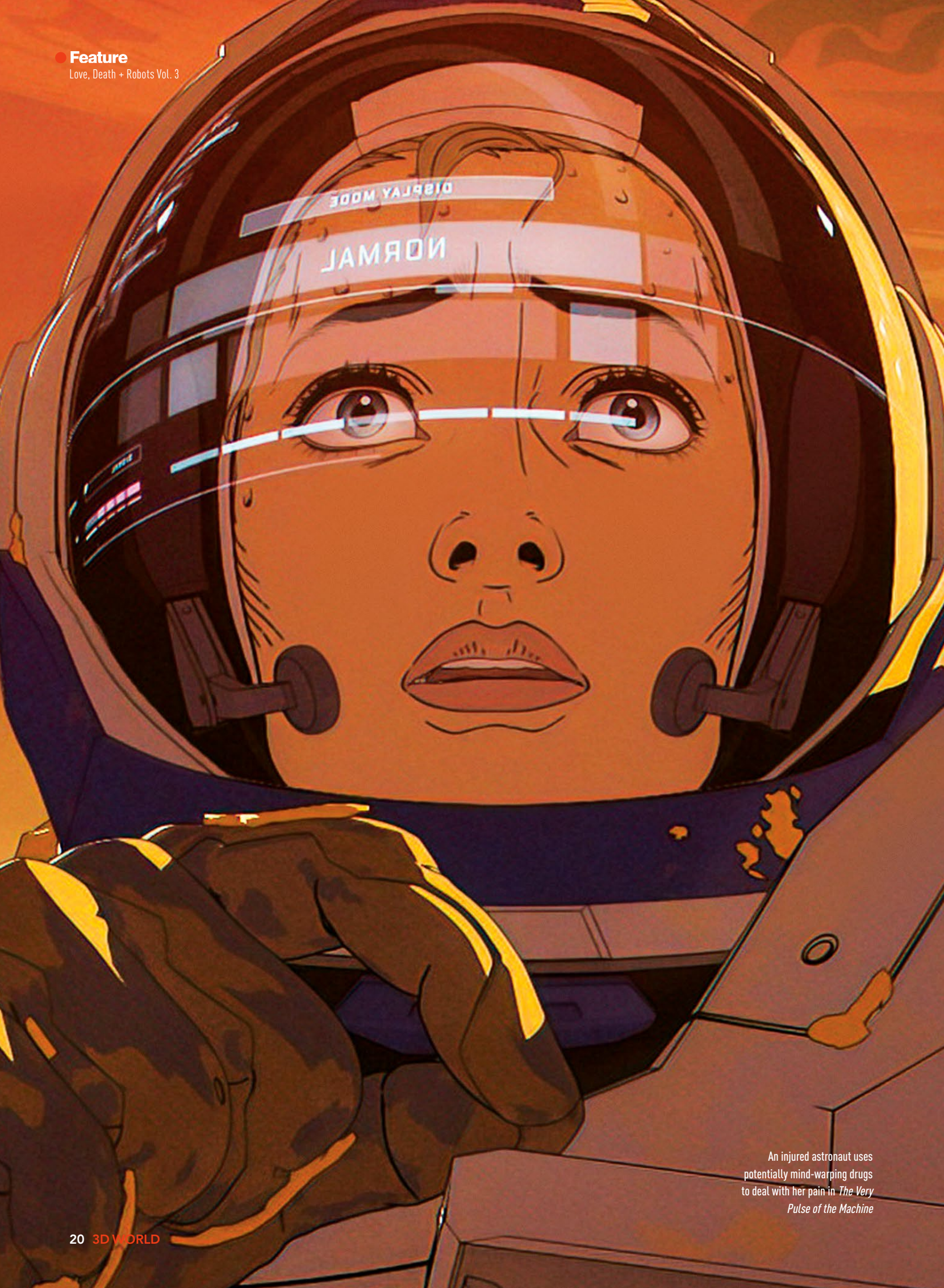
● www.therookies.co/u/roybennettiv



ARTIST Roy Bennett

LOCATION United States

I am a 3D environment artist with a degree in Game Design from Full Sail University. I studied at CGMA for Level Design and at Think Tank Training Centre specialising in 3D environment art for games.



An injured astronaut uses potentially mind-warping drugs to deal with her pain in *The Very Pulse of the Machine*

LOVE DEATH + ROBOTS

3D World gets creative lessons from the filmmakers responsible for the third season of this animated sci-fi anthology

WORDS BY TREVOR HOGG

Executive producers David Fincher (*Zodiac*) and Tim Miller (*Deadpool*) established *Love, Death + Robots* to provide a platform for various filmmakers

from around the world to channel the mature sensibilities of cult classic *Heavy Metal* and prove that animation is not only for children. After two volumes, 26 episodes, and 11 Primetime Emmy Awards, the Netflix anthology has released a third volume consisting of nine shorts that include Fincher's animated directorial debut *Bad*

Travelling as well as *Swarm* by Tim Miller, *Kill Team Kill* by supervising director Jennifer Yuh Nelson (*Kung Fu Panda 2*), and *Jibaro* by Oscar-winner Alberto Mielgo (*The Windshield Wiper*).

Making the transition from live-action to animation was not a huge adjustment for David Fincher. "His eye and sense of storytelling are the same," notes Jennifer Yuh Nelson. "It's just a matter of what tools he gets to use to make it. David is able to use lenses, cameras and lighting as you would in a live-action production, but you can ➤

Images: Courtesy of Netflix



Painting drives the animation aesthetic of filmmaker Alberto Mielgo

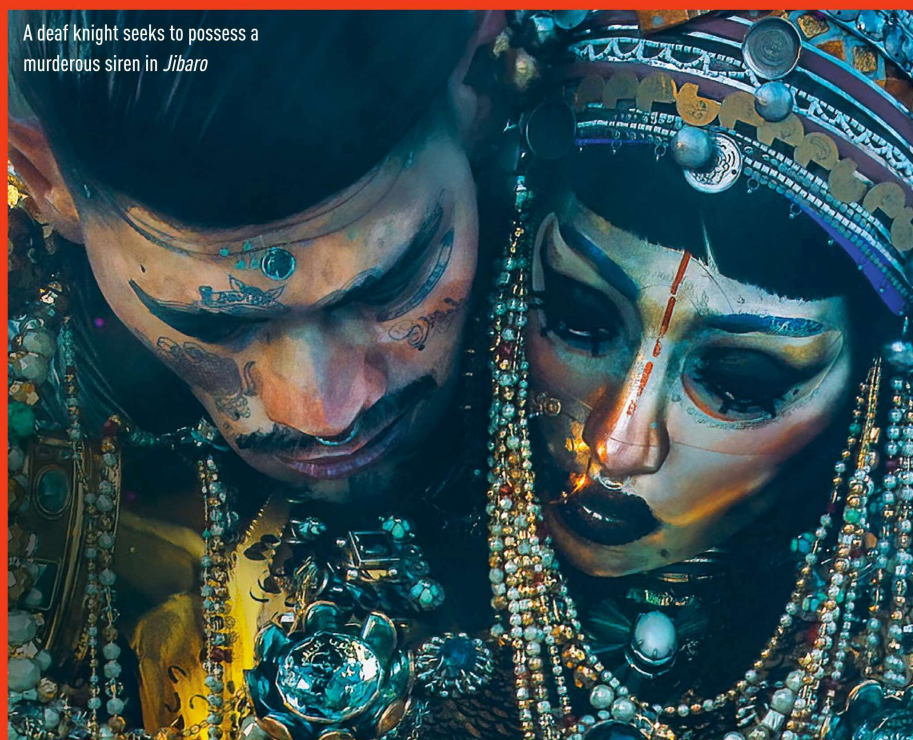
PAINTERLY AESTHETIC

Artistic choices were not made as an animator but as a painter by Alberto Mielgo when making *Jibaro*...

.....

"Everyone is asking me how I chose this style," observes Mielgo. "Actually, my style is how I paint. The style found me in a way. I'm self-taught. I never went to school. My painting style comes from me not knowing what I'm doing. I ended up developing a technique, look and taste that is based on years of working. When I start on a project, I don't peruse around trying to find the right style. It just comes out of myself naturally." The rules of painting are applied. "What I like is the physics of light and how colours and everything react to light. To make it something that is painterly rather than hyper realistic is usually challenging. I wouldn't say that my style is hyperrealism. Perhaps its Impressionism. I'm removing things that you might not need when you are rendering things like pores and wrinkles. I tend to simplify and create an image that is easy to understand."

A deaf knight seeks to possess a murderous siren in *Jibaro*





Extensive water simulations were required to create the seafaring environment for jable shark hunting sailing vessel in *Bad Travelling*



A ship captain attempts to make a deal with a hungry giant crustacean at the expense of his crew in *Bad Travelling*



Visual effects veteran Jerome Chen and Sony Pictures Imageworks partnered for *In Vaulted Halls Entombed*



"YOU ARE ACTUALLY SEEING REAL ARMOUR MOVING AND I FEEL THAT THIS IS EXTREMELY NEW AND FRESH"

Alberto Mielgo, director, *Jibaro*

move things around virtually in animation. So many live-action films are almost animated films now, so there is definitely an overlap." Fincher believes that *Love, Death + Robots* is a sandbox where anything is possible and his contribution is the seafaring *Ten Little Indians*-inspired *Bad Travelling* where a ship captain attempts to make a deal with a hungry giant crustacean at the expense of his crew. "I really loved the idea of going

into the lion's den to negotiate with this alien intelligence as it hand-puppets a human carcass," explains Fincher. "I thought that was inspired cinematically, the idea of, 'Which face do I look at? Who am I talking to?'"

Tim Miller help to shoot some of the mocap stunt work. "It is funny because I've watched him shoot live-action and then I was there while he was shooting mocap. David is so precise about what he is actually seeing through the lens. The things that he cares about on a live-action set, 80 per cent of them are not there on a mocap set. The lighting is terrible, the costumes are nonexistent, and the set is not really there for the most part or at least you have the barebone representation where things are in space. You take for granted just how much imagination it takes to see the scene when the scene is not there except for those actors. David made that switch easily but it's interesting to watch him. Mocap is theatre in the round. You can put the camera anywhere you want later. And David is all about what's in the camera frame and that doesn't matter. It's a paradigm shift. But like a gymnast who went from the vaulting horse to floor routine he did it flawlessly."

A voracious reader, Miller sources all of the stories in *Love, Death + Robots* and has himself adapted short stories by Michael Swanwick, J.G. Ballard, and Bruce Sterling; the trio of shorts began with *Ice Age* which revolves around a lost civilisation living inside of a couple's antique freezer, *The Drowned Giant* focuses on the societal reaction of a small fishing village when a two-hundred-foot-tall body washes ashore, and his latest effort, *Swarm* takes place in the future where two major human factions are divided as to whether advancement should be achieved through genetic manipulation or cybernetic enhancement and technology. "As I'm reading the story I'm blocking the film," states Miller. "I like a story that has some scope to it, that is an interesting idea that I haven't seen before." He describes the premise of *Swarm* as, "an

● Feature

Love, Death + Robots Vol. 3

➤ arrogant human tries to harness the power of a race of apparently mindless insectoid aliens.” As for his attraction to the concept, Miller remarks, “I felt that this was going to be this amazing world. I’ve never seen anything entirely in zero-G – except *Gravity* [a great movie] – and I thought it would be a unique place to explore.”

Joining the project for Vol. 2 and returning for Vol. 3 is Jennifer Yuh Nelson who previously directed the second and third instalments of the *Kung Fu Panda* franchise and created *Pop Squad* and now *Kill Team Kill* for the anthology series; the former imagines a futuristic class society where police officers enforce population control by eliminating unregistered offspring, and the latter is driven by a sense of nostalgia. “For *Kill Team Kill*, my inspiration was cartoons like *G.I. Joe* and action movies from that time, such as *Predator* and *Commando*; they were stupid fun and the story by Justin Coates had that feel to it, so that’s where that came from.” The central idea certainly captures the same spirit as Yuh Nelson describes *Kill Team Kill* as being “a nihilistic action comedy about a squad of soldiers in Afghanistan battling a monstrous cybernetic CIA experiment.”

Participating in Vol. 1 and reuniting for Vol. 2 is Alberto ➤



**“I WAS
INSPIRED
BY CARTOONS
LIKE G.I. JOE
AND ACTION
MOVIES FROM
THAT TIME,
SUCH AS
PREDATOR”**

Jennifer Yuh Nelson, director,
Kill Team Kill

DEFYING GRAVITY

The coronavirus pandemic derailed original plans for *Swarm*...

When asked about how he approached the animation style, character design and world building for *Swarm*, Miller jokes, “We have a set of eight-sided dice and we roll them!” Despite being set in zero-G the plan was to do some motion capture. “But then the pandemic hit and motion capture was not an option anymore. I didn’t want to get caught in the uncanny valley either, so I decided to stylise the characters to a certain degree, which helps the story not be quite as horrible as it would be otherwise.”

“I loved making the show,” continues Miller. “It was a challenge to think about the physics of how people move through zero-G and anything with lots of creatures is a good time. I get a lot of vicarious enjoyment from knowing the animators and creature designers are going to enjoy the process of making this. I would say in general I get a lot of vicarious joy out of going, ‘I’m going to pick this story. Oh, damn, these guys are going to love it.’ Or, ‘They’ve going to have fun with the animation.’”



Tim Miller adapted
Swarm from a short
story by Bruce Sterling

Images: Courtesy of Netflix



An arrogant human tries to harness the power of a race of apparently mindless insectoid aliens in *Swarm*



The exaggerated stylisation allowed for a humorous approach to the blood sprays in *Kill Team Kill*



Kill Team Kill is a homage to testosterone-fuelled action films like *Predator* and *Commando*

TAILORED FOR ANIMATION

Brought on to look after the animation for *Kill Team Kill* was a new recruit...

Looking after the animation for the series' violent, action-packed *Kill Team Kill* short was a new recruit. "I got to work with [animation studio] Titmouse, which we didn't get to work with on the other seasons," states Yuh Nelson. "They're an amazing studio with a wide variety of different styles. I got to work with Antonio Canobbio and Benjy Brooke who helped to find this look. It's a 2D style so it has to be animatable. The character designs themselves are covered with veins and packets of ammo, which are hard to animate but we had the benefits of a team of amazing animators from all over the world and you can see that level of expertise in it. But the look of it was found in that testosterone-laden, muscle guy action of the 1990s."

Miller believes that the story is tailor-made for animation. "If you had tried to do that in live-action or realistic CG or even stylised CG, it wouldn't be as nearly as funny," he states. "It feels like it should be exactly what it is."

Yuh Nelson agrees. "The blood spray wouldn't be as funny. The 2D allows for a complete level of exaggeration so that the extreme violence becomes funny again."

Feature

Love, Death + Robots Vol. 3

➤ Mielgo who previously directed *The Witness* that centres around a witness to a brutal murder who flees through the streets of a surreal city pursued by the killer; and the tragic fantasy *Jibaro* where a deaf knight seeks to possess a murderous siren. “I wanted the girl to be a walking treasure, and in order to do that I was doing research on folklore jewellery from Northern Africa, China, India, and Pakistan.

“For the guys, I wanted to do something based on the Renaissance. We did something interesting which is we used real scans of armour that you might see in museums. When you see the armour it feels almost unbelievable that you can fit a person inside. The cool thing about this is we don’t actually need to fit a person inside because these aren’t real characters. You don’t need to have their body. You can just have their neck. We were redesigning it a little bit, but because you are actually seeing real armour moving and I feel that this is extremely new and fresh.”



Three Robots: Exit Strategies revisits a trio of droids that originally appeared in Vol. 1



“IT WAS A CHALLENGE TO THINK ABOUT THE PHYSICS OF HOW PEOPLE MOVE THROUGH ZERO-G”

Tim Miller, director, *Swarm*



Hugo Award-winning sci-fi novelist John Scalzi wrote the script for *Three Robots: Exit Strategies*

PARADIGM SHIFT

Advances in real-time technology and game engines have made animation more affordable and accessible for filmmakers...

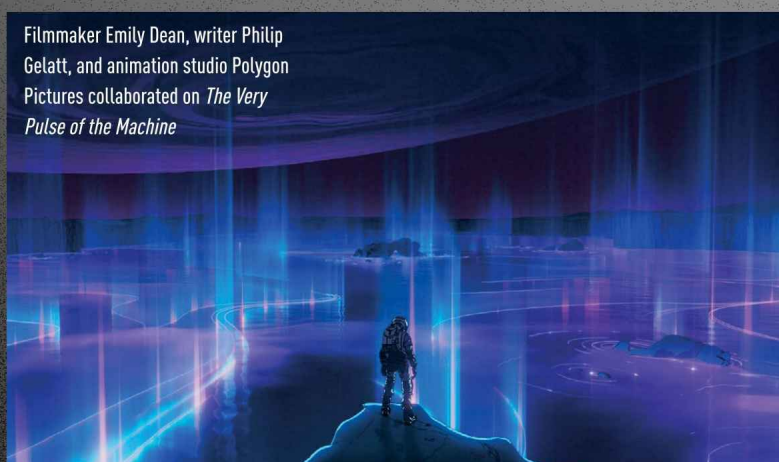
“I don’t know if it’s types of stories that game engines have affected,” notes Yuh Nelson. “It’s the look and how much you can deal with certain levels of complexity. When 3D animation came out it allowed us to do certain things that we couldn’t do in 2D animation. The same with a lot of the game engines. You are able to express an entire world, adjust things in real time, and change the light if you want. It’s not baked into things like it is usually.”

Miller believes that game engines will have a huge impact. “I’m so old that I was on the cusp of the desktop revolution. When I started in the business, you had to have a lot of money to be able to do 3D animation. Then desktop technology and software came along; it democratized the process which allowed us to start *Blur* borrowing \$20,000. I thought that was amazing, but game engine technology is going to be a paradigm shift again.”

Rendering has become more manageable. “Even lots of cheap PCs are still expensive and need some technical infrastructure,” remarks Miller. “Now people can do minutes-long shorts in their basements at home and you can see it on the web. You see a lot of interesting artists doing great things by themselves or with small teams. Game engine technology is super exciting. I feel like that I’ve been waiting for it awhile, but now it’s here.”



The Very Pulse of the Machine is based on a short story by Michael Swanwick



Filmmaker Emily Dean, writer Philip Gelatt, and animation studio Polygon Pictures collaborated on *The Very Pulse of the Machine*

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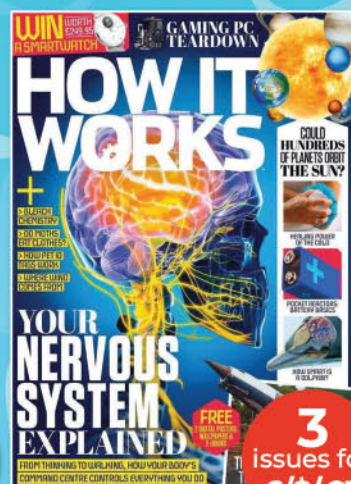
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BREAKING LOOSE



Mr. Wolf (Sam Rockwell),
Mr. Snake (Marc Maron),
Ms. Tarantula (Awkwafina),
Mr. Shark (Craig Robinson)
and Mr. Piranha (Anthony Ramos)

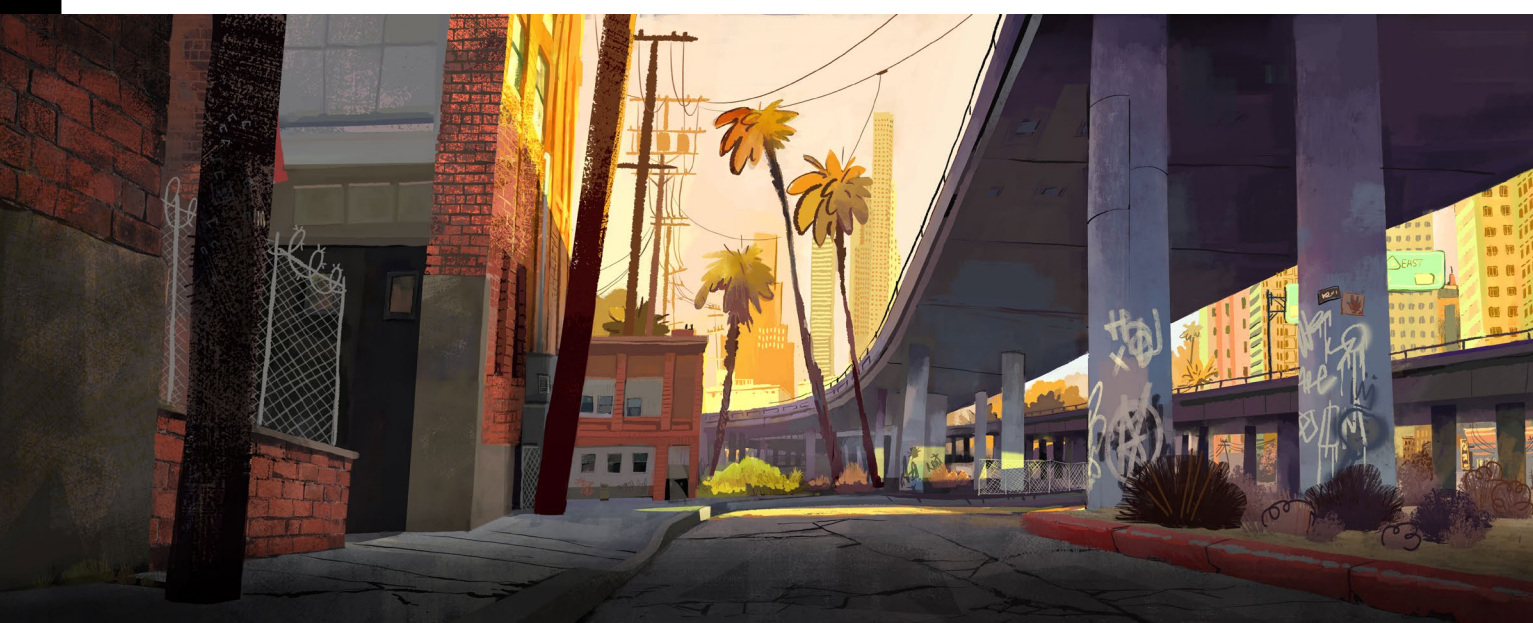


with the **BAD GUYS**

Trevor Hogg goes undercover to get some inside information on DreamWorks' latest animated adventure

B

reaking down animalistic stereotypes within a Quentin Tarantino-inspired heist story meant for children is at the heart of graphic novel series *The Bad Guys*, created by Australian author Aaron Blabey, which has been turned into a box office success by DreamWorks Animation and filmmaker Pierre Perifel. >



➤ The vilified creatures in the feature directorial debut of Perifel are Mr. Wolf (Sam Rockwell), Mr. Snake (Marc Maron), Ms. Tarantula (Awkwafina), Mr. Shark (Craig Robinson) and Mr. Piranha (Anthony Ramos). “There is no way that you can stick for the long run with something you don’t like or feel drawn to,” admits Perifel, who was initially drawn to the story’s universe. “It could be a heist movie or a production by Quentin Tarantino or Steven Soderbergh; those are the kinds of movies that I grew up with and have always loved. But also, deep down underneath all of this is the journey of Wolf and the idea that people can change and figure out more meaning in their personal lives – and that was something

that I connected a lot with for personal reasons.”

An illustrative quality was maintained with the animation style. “I don’t know if French animation is always this stylised, but I definitely wanted to explore that and bring influences from Hayao Miyazaki and anime,” remarks Perifel. “The Japanese style is economical and is all about illustration. It’s in a way making sure that each pose reads well before and in-between them.”

While the story was being developed, the style was a moving target. “The parameters that we had in the beginning were, ‘We don’t want to make 3D look like 2D because we might as well as do it in 2D,’” recalls J.P. Sans, head of character animation. “Pierre also

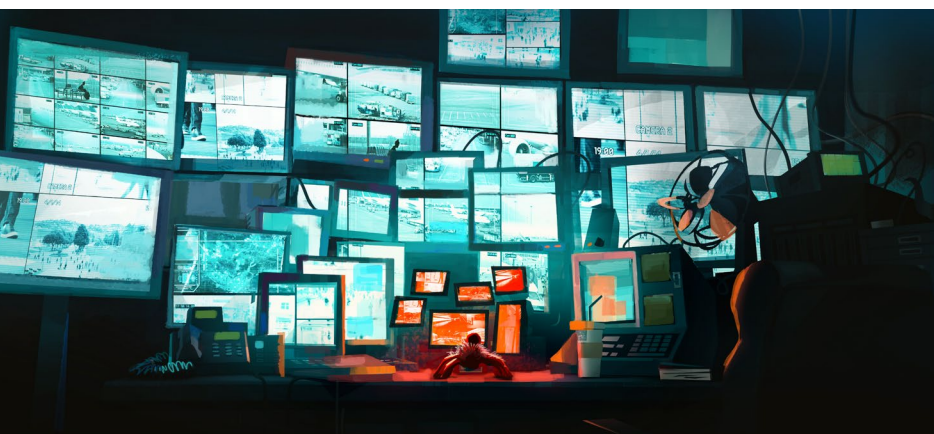
Above: Concept art by Floriane Marchix that explores the white skies and warm light of Los Angeles

Top right: Ms. Tarantula is highlighted by camera monitors and computer screens in a lighting key by Marchix

Right: Effects such as explosions were made to feel as if they were 2D

wanted to simplify things enough so it doesn’t feel like you can see the pores and strands of hair. He wanted to go graphic with it. A lot of the tricks that came to make *The Bad Guys* look the way that it does is in the surfacing and lighting.”

An effort was made to create tools that could remove superfluous artwork details procedurally. “We were trying to figure out how to provide tools and workflows that allow our artists to problem-solve visually the same way an illustrator would,” states Matt Baer, visual effects supervisor. “We couldn’t just build geometric models to represent fur because that wouldn’t give us the ability to demonstrate what the material is



from different angles. We wanted to have the flexibility to change the groom based on whether the character got wet or got excited and the hair frizzed out. However, most of our rendering tools and shading techniques like to show every fibre; that's exactly the opposite of what an illustrator would want. We put a lot of work into the directionality of how that fur moved along that face, knowing that we would be using sheers and layer additional compositing techniques and filters

to lose almost 80 per cent of those fibres on a per-shot basis. We needed the ability to change that in every single shot, without our lighters/compositors having to do a lot of manual work in the shot."

Inspiration came from art director Floriane Marchix and production designer Luc Desmarchelier. "We sat with them early on and started analysing their artwork," states Baer. "Luc would start as a draughtsman drawing all of the lines in the beginning, adding in colour

EXPLOSIVE ILLUSTRATION

Visual effects supervisor Matt Baer on creating explosive effects with a 2D look



"We were inspired by some illustrations that our art department had done and had seen in other films," remarks Baer. "The goal was not to make it look like a fluid simulation. We wanted to represent the cooler and hotter areas of an explosion in a much more graphic way. From the base of that explosion, it was represented with a different type of geometry that didn't go through a volume or fluid-based simulation. If we needed to make additional 2D-looking elements on top of that, we created new tools called Doodle that would allow the effects artists to essentially add additional 2D animated elements on top of that base explosion. It wasn't a fluid simulation, but they could essentially add 2D elements that would ride along and marry with the service of the explosion, which helped to sell the illusion of the whole thing being done as a 2D effect."



"A LOT OF THE TRICKS THAT CAME TO MAKE THE BAD GUYS LOOK THE WAY THAT IT DOES IS IN THE SURFACING AND LIGHTING"

J.P. Sans, head of character animation, *The Bad Guys*



SILHOUETTE & POSES

Simplifying the animation made it more apparent whether the silhouettes of the characters were correct

“There was nowhere to hide!” laughs Sans. “Imagine if a manga came to life and what it would look like; that’s *The Bad Guys*. We were definitely trying to hold poses more often than not and when we do hold those poses, we wanted to make sure that they were graphic and appealing.” The streamlined style impacted the ability of characters to emote. “When you furrow your brow, you get these wrinkles that have a lot of expression in them. Because we’re

trying to simplify things, we didn’t have actual geometry to create those wrinkles. What we had instead were just lines that we would draw. They were on the rig but instead of having realistic CG wrinkles, it was flat and we would have a line that would give us the indication. Those were the ways that we simplified the rig and geometry to create rapid poses, but by the end of the day we still had to add those emotional beat details, such as little eye movements.”

Top: A character design plate featuring the criminal quintet known as *The Bad Guys*

Above: Character expression sheet of Mr. Wolf

➤ and texture, and then erasing some of those lines. Floriane worked with little brushstrokes and then outlines later. That inspired us to do both on the CG side. We wanted to come up with ways that would allow us to hide detail in the rigging, so you could procedurally lose some of detail on a per-shot basis depending on the angle of the light.

“We also wanted the ability to add additional linework later on in order to enhance the idea that the image looked handmade. If you look at Wolf, some of his linework is built into the rig. That allows the character animator to move these expression lines around. We also even painted some lines into his fur; that stuff is cooked into those renders.”

Alterations had to be made in particular to the characters which were being granted the cinematic ability to move. “The art of Aaron Blabey is simple and efficient, but yet you have to expand upon it to make a visual experience on the big screen,” notes Perifel. “There are also limitations to his characters that you want to change or rework so you can have the characters actually moving. A shark without legs in our world would have been difficult to do. The same for Piranha.”

Piranha in the books is portrayed as an actual fish. “We asked ourselves, ‘Do we do a fish? How do we do a fish with legs? How does that look?’” explains Sans. “We figured out clever ways. The fish tail is actually his ponytail. From here he looked like



Above: A storyboard by Pierre Perifel exploring the composition of a driving shot

The director was drawn to the personal journey and character development of Wolf

an actual fish but when you see him from afar it's a character with legs and arms.” Visual tricks were utilised to make the characters cuter. “The fur on tarantulas looks like it could stab you, so we made that feel soft. A separated torso and head were added to give a humanistic feel. We wanted Tarantula to feel like a spider based on her speed and how she moves. Sometimes you'll only see four legs in total [to make her more visually appealing].”

“Where we wanted detail to show up on each of those characters was where the highlight would transition into the midtones, or where the midtones would transition into shadow,” reveals Baer. “Each of the characters came with their version of a base colour and then a texture map. Based on where the light was sitting, we could dial in some of that texture in those transitional areas. That all

gets fed into the comp where the lighter can dial in. Snake has these patterned scales but we didn't want to see those everywhere. We just wanted to see those on the roll-off into the highlights. Additionally, we provided more tools in the comp so that they could add new textures into those roll-offs as well.”

The lighting strategy ensured that the characters integrated with the environments. “The biggest difference was how that specular highlight worked on Wolf compared to how specular highlight worked on furry characters in other shows, where it is generated by the same type of light on the same type of material that is affecting the entire body. However, for *The Bad Guys*, the specular highlight was primarily meant to look hand-drawn,” explains Baer.

Achieving the proper tone was an interesting balancing act. “We ➤

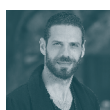




➤ have characters flying, falling, jumping and crashing. It comes down to making sure that these characters are stylised but not to the point that you know that they're not going to die," says Perifel. "We're dealing with kids, but you still want that sense of jeopardy. You know that people can be eaten by Mr. Shark. There is no question about that. And yet they are doing stuff that is quite outside the realm of realism."

When it comes to Perifel's opinions on CG visuals, "I don't like blue skies and green grass, because for me it's bland," the director says. "I like it when it is much more painterly and has a strong identity. Soderbergh colour codes every scene, so that you're never lost when you come back to the location. The location also brings its own thing. There is strong lighting in Los Angeles. We have white skies and warm light; the sunsets are special. Luc Desmarchelier, the production designer, came up with a simple colour theory. The bad guys are in the warm colours and a cooler palette when they attempt to be good guys. Then you have them getting caught by the police and more desperate moments, that are at a much higher key."

With regards to 2D effects, Baer remarks: "We built a big sprite library with some of our 2D effects artists, and created a bunch of procedural simulation techniques that could be rendered and composited in a way that you



"I BELIEVE THAT ANY PLOT OR EMOTIONAL POINT SHOULD BE TOLD IN AN INTELLIGENT WAY"

Pierre Perifel, director, *The Bad Guys*

Above: Mr. Shark had to be redesigned from the books in order to accommodate legs for motion

The Bad Guys are in warm colours and a cooler palette when they attempt to change their ways and do good

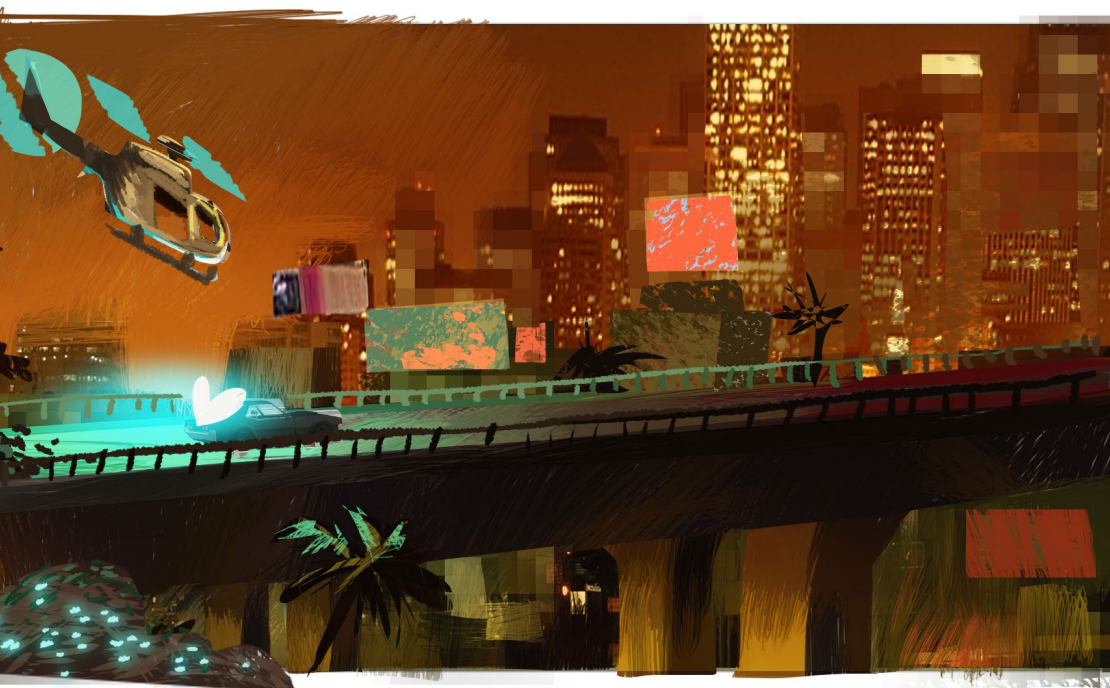
can mix and match the sprites with simulations. The goal was to not know where one started and where one ended."

Characters and environments were treated the same way. "Essentially, you're trying to boil each of those components down to the necessary detail so that the audience can fill in the rest," explains Baer. "The challenge if you have ever built a tree with leaves was that we didn't want to see every single leaf. We also wanted the ability to make it look like we took a drybrush and brushed it across the whole tree. Essentially, we wanted to represent a lot of those leaves with the speckle and texture that you



would get from a drybrush. When you are outside of the silhouette it would seem like those were physically geometric leaves."

Baer continues: "If you had a tiny impact shape of a rock hitting the ground, typically you would do a dust, grit or sand simulation to sell that something broke and hit. On this show we had to come up with how an illustrator would represent that in a painting. What's the simplest way to represent that? Quite often we would replace what typically would have been three to five different simulation types and different materials, with two or three drawings that we could do in the shot."



The preproduction schedule was tight because DreamWorks Animation wanted to make the film quickly. “Preparing all of the assets and characters would have been fine if it was the regular style, but I wanted a style that was different from the usual visual style we’re doing,” remarks Perifel. “It was to be more stylised with brush textures and linework. Figuring all of this out in six months was tricky. But once the team worked it out it went smoothly. That would be the hardest part of it. Then of course, the transition to working from home technically.”

Every sequence is fun to watch, and the film provides lots of entertaining action moments. “There’s so much in there and I believe that any plot or emotional point should be told in an intelligent way,” states Perifel. “There are two action sequences in the second half of the film that are incredibly fun to look at. There is a big car chase at the head of the film where the characters have just robbed a bank and are escaping the police, that’s six minutes long and is fun to watch. There is a fight scene and another chase scene at the end that are cool. There is a lot in this movie!”

Above: Floriane Marchix does a colour concept for the finale chase sequence

An animation style was adopted that was a hybrid of illustration and anime

ART DRIVES TECHNOLOGY

J.P. Sans, head of character animation, recalls the film’s technical achievements

“What I like about DreamWorks Animation is art drives technology,” observes Sans. “Todd Jansen, the head of layout, wanted to give us an anamorphic lens, which is what you usually do in live-action and was never done in animated films. Anamorphic lenses have a Los Angeles film vibe to them and Todd thought that would look great. We wrote tools to have this lens distortion whenever we needed to. The other tool that we had was a comic book style, so there are a lot of drawing effects. When we talk about fire and smoke, we wanted it to feel 2D as well. Effects had a whole different pipeline that they needed to figure out and make sure the effects look illustrated and not so realistic. We could draw motion blur and multiple legs for when a character was spinning around.”

Shots from *Ernest & Celestine* and films by Hayao Miyazaki were copied frame by frame in CG and shown to Perifel. “It was a great way to find our parameters. The style that we found was removing some of that motion in CG and letting the mind fill in the blanks like you do in 2D.”



KOGDA

Software ZBrush, Photoshop

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Technique focus

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MODELLING First, I compiled reference images to serve my original ideas for this project – the likes of King Kong, reptile skin, rhino horns and stones were amongst those I gathered as a starting point. Next I created a blockout for the basic shapes of my concept and then continued to refine the details. The creature's fur was created with the FiberMesh tool, render passes were done in ZBrush, and the compositing of the final image was completed in Photoshop.



Ninh Văn Ngọc
artstation.com/phongtom

I come from Vietnam and have six years' experience as a lead 3D artist.

Head to page 28 for
behind-the-scenes info on
DreamWorks Animation's
The Bad Guys



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MAPPING OUT UNGHARTFED

Uncover the mysteries behind the visual effects created by DNEG

WORDS BY TREVOR HOGG

Feature ●
Mapping Out Uncharted

This 2022 movie adaptation is based on the original action-adventure video game series developed by Naughty Dog



Considered to be one of the most acclaimed video game franchises, *Uncharted* leaves behind the wilderness of Hollywood development hell to have Tom Holland

portray treasure hunter Nathan Drake, Mark Wahlberg take on the role of mentor Victor 'Sully' Sullivan, and Sophia Taylor Ali play hired thief and potential love interest Chloe Frazer. The trio seek to find the lost gold fortune onboard 16th century ships Trinidad and Concepción, while contending with mercenaries contracted by business tycoon Santiago Moncada (Antonio Banderas), whose ancestors funded the expedition led by Portuguese explorer Ferdinand Magellan.

In order to achieve the scope and death-defying action sequences, filmmaker Ruben Fleischer (*Zombieland*) partnered with production visual effects supervisor Chas Jarrett (*Logan*). DNEG served as the primary vendor with facilities in



"I REFERENCED CRAZY SKYDIVING STUNTS AND HEAVY-DUTY HELICOPTER FLIGHT MANOEUVRES"

Sebastian von Overheid, VFX supervisor, DNEG

SURVIVING THE DAISY CHAIN

Robot arms were creatively utilised to practically shoot a signature aerial action sequence

Crates were placed on KUKA robot arms, which were situated on top of a moving gimbal and object tracked. "Then we had a full CG version of the entire daisy chain," explains von Overheid. "We would examine what had been shot and block it out in layout and present it to Chas to discuss what else we want to do with the shot. We'd explore modifications to the practical elements up to a certain point before it breaks in terms of the perspective, and then decide whether a shot would become full CG. But there were definitely a lot of shots where we just extended the daisy chain in the background and used the practical plates."





SEEING DOUBLE

Every character in *Uncharted* was required to have a digital double

Digital doubles were created after principal photography had finished. "You want to know what level of detail is needed," notes von Overheid. "Does a digital double have to hold up for a full-screen dialogue scene? That's a different beast than having a digital double for a stunt scene. We had to build a lot of digital doubles for the mercenaries, pilots, Braddock and Hugo but also Sully, Chloe and Nathan in high detail. We broke it down into tiers. Sully would need to hold up 1/2 screen size because he has some stunt scenes, but we're never close-up on his face. You go from there." Clear Angle Studios did on-set scans of the actors. "We would get packages of photogrammetry material with texture references that was polarised and unpolarised so that we could build them one to one."



Above: Invisible effects included bluescreen window inserts

Right: Sections of ships were constructed on different soundstages and then digitally pieced together to create the Concepción and Trinidad

Left: Crates were placed on robot arms situated on a movable gimbal for the daisy chain sequence

Vancouver and Montreal being responsible for 739 shots across 23 sequences, including the entire third act which unfolds in the South China Sea.

Despite being a gamer, DNEG VFX supervisor Sebastian von Overheid had never played *Uncharted* and did some research to understand the characters and the gameplay. "My affinity for gaming never converged with my visual effects work from an artist point of view, because I was more rooted in photography and graphic design. I did more research on the game to understand what an in-game demo looks and feels like. Who are these characters? Then I

followed my usual approach of finding inspiration from talking to the client, reading the script, looking at edits, seeing what the art department had come up with, and searching for online references like crazy skydiving stunts, dropping heavy objects in water and heavy-duty helicopter flight manoeuvres. There was also great footage of the entire South China Sea environment that production shot in Thailand."

Von Overheid oversaw the bulk of the work in Vancouver while the rest was produced in Montreal by DNEG VFX supervisor Benoit de Longlee. "The airport, auction house, the pizza den and catacombs as



well as the Demar Cave, where Nate discovers the two ships, were sequences that Benoit oversaw. I supervised everything on the C-17, the 90-second long ‘The Oner’ shot when Nathan and Chloe fall out of the C-17, and the third act which was the boat battle. The Vancouver team supervised most of the shared assets, but otherwise the Montreal team worked independently with the client.”

Tom Holland is quite athletic, which enables him to perform stunts. “There is a limitation to the performance when you’re hung up on a wire, because it affects your whole hip and pelvis,” notes von Overheidt. “The crates were placed on KUKA robot arms and the whole rig was moving on a full gimbal. The stunt doubles were jumping between the crates. You could see how their body weight was thrown around randomly.” The footage was closely analysed to then determine when a digital double takeover was required or a head replacement. “Once the postvis was done [by The Third Floor and RISE], we did a full blocking pass for all the sequences; from there things would change in the edit and story points would be refined.”

Trimming scenes in the third act meant that continuity was a concern. “You start and finish with a certain number of mercenaries on the ships. Within those parameters you have to follow carefully how the edit is progressing. We prepared by meticulously mapping out where



WAYWARD GULLWING COLLISION

As Nathan Drake makes his way back onto the C-17, a Mercedes Gullwing has other plans for him

“Tom Holland jumps off of a stunt pad onto a stunt mat,” remarks von Overheidt. “We put the C-17 in and figured out, what is the distance that you can get away with to make it look somewhat plausible? We were also working closely with the editor to figure out what the filmmakers feel comfortable with. We would make proposals to make the jump work. ‘This needs to be trimmed by eight frames. The crate has to be higher.’ You figure out what the eyeline is. How Tom looks into the camera. What is the height of his eyes from the ground? Then you do the reverse angle. What would the height of his eyeline be looking into the interior seeing the Mercedes Gullwing coming towards him?”

Plates were shot of the practical Mercedes Gullwing inside of the C-17. “When Chloe slides over the hood to hide behind another crate, that took place on the real Gullwing,” reveals von Overheidt. “But that particular moment where the Gullwing comes toward us, that was never shot. When Ruben was working in this whole scene this shot dropped and originally it was supposed to be a POV of Nate looking down at the ramp. That shot of the Gullwing and interior became entirely CG. The amount of detail in the interior of the C-17 was taken to a much higher detail level than initially intended. We replaced a couple of actors with digital doubles and ran a simulation from the airstream. It came together lovely.”

people move from A to B, who is fighting whom, and where is this camera taking place? Every mercenary had a name.”

The interior of the C-17 was built with the tail section and ramp missing. “The back of the set had bluescreen, and inside we built up the flapping netting and replaced some of the cargo,” explains von Overheidt. “When things get wild inside the plane, we would add the moving cargo in CG, which gave us the opportunity to add to the violence of the scene in animation. Everything had a simulation that made it look like someone

**“WE TRY TO
ANCHOR IT
IN CORRECT
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PURPOSE
ANYMORE”**

had ripped the door open and there was this airstream going through. A digital replica was created of the interior so we could resort to full CG shots or be able to replace large sections.” Creative licence was taken by animation and layout artists. “When doing the research, you get a good idea of what realistically should go down inside of a plane if someone rips the door and tail open, but you can't do that because it would empty the whole plane and be the end of the movie!”

To ensure continuity, every crate was numbered. “We paid attention to what crate goes out first,” states von Overheidt. “When does that mercenary fly out of the plane and what is the tumble path? You pick up that same tumble path in the next shot of the exterior. Where does he land? What crate is it that

he comes up from and starts pulling on Tom Holland's leg?” A 90-second sequence plays as one shot as Nathan and Chloe tumble towards the South China Sea and grasp onto a crate with a parachute. “As Nathan tumbles, we tried to retain his face; when he would turn around, we would takeover in full CG so that the camera could be freed up and have him fall to the next stage where he meets up with Chloe. As the crate comes down and rotates, we transition from full CG right in camera into the plate and replace the crate and parachute.

“We recreated the shadow casting and contact shadows on the crate as well as giving it some wind. At the moment when Nathan and Chloe hit the water, they transition into full CG so we could have a stronger reaction ➤

DESTINATION SOUTH CHINA SEA

Originally the plan was to use plate photography as the background for the South China Sea environment

“We knew that environment would have to be extended in certain shots and some shots needed to be full CG,” remarks von Overheidt. “While developing the South China Sea, we presented camera flythroughs which looked so amazing that the DP was convinced he was looking at his footage! That convinced Ruben that if we were to go full CG for the entire environment, that opened a lot more creative freedom for camera positioning and the animation of things. That's what we ended up doing. The shots where we had to interact with vegetation and water are bespoke so they're not necessarily part of the big environment.”

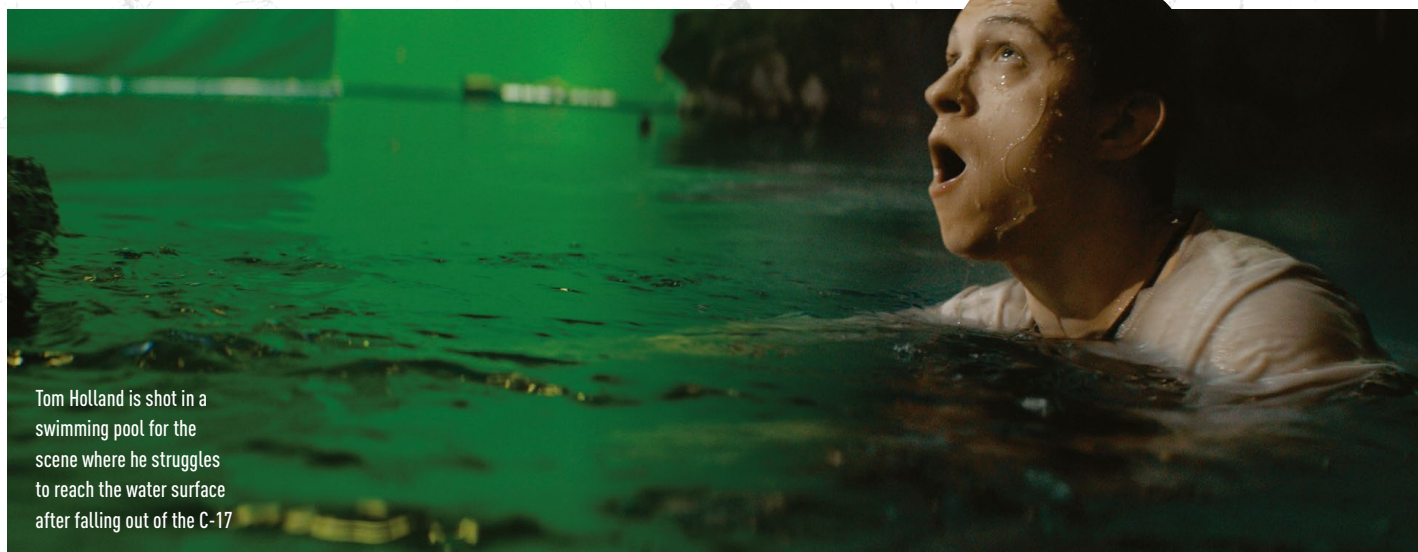


Opposite: Nathan Drake (Tom Holland) takes part in the aerial battle for the Concepción and Trinidad

Above: Tom meets Nolan North – the actor for Nathan Drake in the game series

Right: Originally planned to be based on plate photography, the South China Sea environment became fully CG





Tom Holland is shot in a swimming pool for the scene where he struggles to reach the water surface after falling out of the C-17

› to the impact and render their refraction through the CG water.” The underwater scenes with Nathan and Chloe trying to get back to the surface were actually shot in a pool. “All of the underwater bubbles, atmospherics and even the water surface were added in CG.”

Pirates boarding ships swinging on ropes is a staple of cinema; however, *Uncharted* adds a twist where the action unfolds while the Trinidad and Concepción are being transported by aircraft. “The first thing we did was to design a custom helicopter, which involved looking at classic ones for heavy lifting, such as the Sikorsky and Chinook,” remarks von Overheide. “Because Santiago Moncada is a multibillionaire,

we created a hybrid version that was even beefier than a normal Sikorsky or Chinook.”

Creative liberties had to be taken in the name of being cinematic. “We try to anchor it in correct physics until it doesn’t suit the creative’s purpose anymore. At that point it comes down to the artistry of the layout and animation artists. We tried to make sure that we swing at the right speed so that the ship looks heavy. The helicopter has a little bit of a drag and lead so that it looks clearly affected by the ship and its pendulum path.” Sections of ships were placed on soundstages as big sets, which were LiDAR scanned. “We pieced it all together into the Trinidad and Concepción.”

SWING OF THINGS

A different sort of ship fight takes place onboard Concepción and Trinidad

Certain tricks assisted with the suspension of disbelief as aerial mayhem ensues. “We would try to implement cues of the swinging momentum so when the mercenaries go up, they’re not doing it when the ships are going apart,” explains von Overheide. “You may have one or two shots leading up to the swinging when they get close and take that momentum to make it to the other side.”

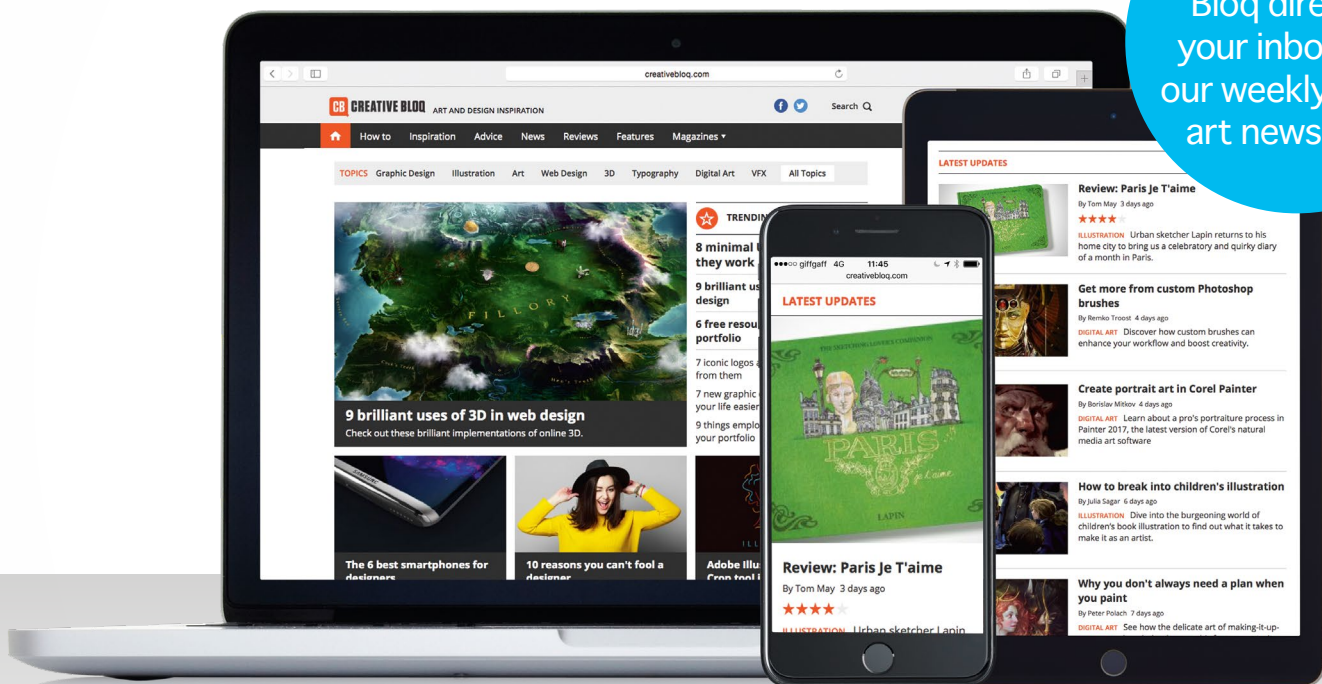
There was more of an opportunity to change the design of the Trinidad. “The stern section was a lot narrower originally and was changed to look cooler in the cave with wide-angle camera shots. Also, we didn’t want fully operational masts on both ships. One had to be more deteriorated and broken down so that it leaned differently.”



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From *Star Trek*'s final frontier, to the futuristic *Halo* universe, see how Pixomondo has mastered immersive world-building with KitBash3D assets



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ASSEMBLING THE FINAL FRONTIER FOR *STAR TREK: DISCOVERY*

Crafting exotic planets and futuristic sci-fi environments was an essential role for Pixomondo in world-building for the Emmy Award-winning series *Star Trek: Discovery*. For four seasons, Pixomondo has transported audiences to the final frontier through developing cinematic worlds, under the direction of VFX supervisor Fausto Tejeda.

On season two, the team was tasked with recreating an entirely new and futuristic planet from scratch and based solely on concept designs. "We received general guidelines and concept art from the client, and we were able to use KitBash3D assets as the foundation for >

Stunning 26th-century
cityscapes were
central to *Halo*'s
visual storytelling



EXPEDITING VFX WORKFLOWS

Leveraging KitBash3D plug-and-play assets has saved Pixomondo several weeks' worth of time, which is essential for fast-paced episodic workflows

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Tejeda shared, "Having the assets as a base allowed us to focus more on the beautification of shots, such as lighting, making sure things are in direct position, layout, and addressing client notes on which specific buildings need to be enhanced. We don't have to worry so much about the grunt work of starting things from scratch; it's more about making sure a shot looks aesthetically pleasing. That takes a decent amount of time too, so any little shortcut that we can take is always valuable."

"KitBash3D's assets come prepared for Unreal, Maya, V-Ray, Arnold – or whichever tool you're using – so, it's easy to plug-and-play and very quickly hit the ground running within several hours; whereas, previously, this would have taken days or weeks," continued Tejeda. "We're able to take an asset and move it through the entire pipeline, which is really important. Most of the time, although we're building assets to put up on the LED wall, we're going to have to reuse those assets again and again in post. For instance, if a client wants to do a wide establishing shot, we render the assets right out of Unreal, so it's important that our assets are high enough quality for both our Unreal work and post work."

AN “ASSETIZED” MINDSET

When it comes to saving time on fast-paced productions, having high-quality, pre-built asset kits available is a game-changer

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Berbasov has witnessed the evolution of post-production pipelines, sharing, “When I first got started in the industry 24 years ago, everything had to be built from scratch. Today, we’re seeing companies like KitBash3D present and popularize an ‘assetized’ mindset – one where assets are no longer being built manually and having accessible, pre-made, high-quality model kits as a starting point is making life easier for artists and expediting post-production workflows. This is especially critical for fast-paced production environments, like for episodic series.”

Images: Pixomondo

Leveraging KitBash3D assets allowed Pixomondo’s team of skilled artisans to craft immersive environments for *Halo* under tight deadlines

“IT WAS AMAZING TO USE KITS FROM THE GET-GO THAT WORKED FLAWLESSLY”

➤ our environment building. The model kits have an established geometry and look that matched the concept, and we were able to further customise and build upon the assets. It was amazing to use kits from the get-go that worked flawlessly,” says Tejeda. Similarly, for season three, the team developed a futuristic San Francisco to accommodate a timeline jump to 900 years in the future. Tejeda adds, “We used KitBash3D’s Utopia kit as the basis of the environment, then further customised the asset and added new textures.”

For season four, Pixomondo began incorporating virtual

production workflows and filming sequences on two in-house LED volumes. “Using KitBash3D assets allows us to lay the groundwork and do the blocking within a scene. The assets have been essential for enabling us to rapidly get iterations out in compliance. We’ll quickly kitbash a scene with massive environments, then we’ll get them up on our huge LED volume walls to gauge if the scale and distance are working,” says Tejeda. “It helps us get work in front of the client as fast as possible. When we have Zoom meetings with clients, we’re also able to do quick demos or show work in Unreal Engine, then change or swap out assets in real-

time. From there, we’ll continue to build upon the assets to reach our final desired look. It’s all about speed nowadays, and having tools like KitBash3D that we can rely on and use confidently in our pipeline is instrumental for our workflow.”

SETTING THE STAGE FOR HALO WITH PROCEDURALLY-GENERATED ENVIRONMENTS

For Master Chief’s battle for mankind against the Covenant alien race in *Halo*, an epic backdrop of 26th-century cityscapes was central to visual storytelling. Under the direction of head of CG Evgeny (Johnny) Berbasov, Pixomondo crafted procedurally-generated environments to set the stage for the pinnacle war and reimagine the in-game universe for television audiences. ➤



Procedurally-generated environment building helped Pixomondo ensure that no two buildings looked identical on *Halo*

Feature ●
Cinematic world-building with KitBash3D



The view from the flight deck on *Star Trek: Discovery* was another challenge and then triumph for Pixomondo



A timeline jump to 900 years in the future required Pixomondo to create a sci-fi version of San Francisco for *Star Trek: Discovery*

➤ To expedite production, Pixomondo leveraged KitBash3D model kit libraries as the basis and inspiration for show world-building. Berbasov: “We were able to take specific buildings from KitBash3D’s libraries and transform them to align with the unique design of the *Halo* universe, rather than taking extra time to create models from scratch. This laid the foundation for creating the massive 30-kilometre cityscape, allowing us to present work to the client faster than before.”

Pixomondo used a procedural world-building process to ensure that no two buildings in the series looked identical. To achieve this, the team created a library with multiple variations of floors, bays, roofs and GAFs that were based on the original KitBash3D model kits but fully customised to align with the look of the *Halo*

universe. Working in Houdini, the team procedurally combined the separate elements together to create the layouts for unique and different buildings. The map of the 30-kilometre cityscape with buildings, streets and water lines was also procedurally generated, with different elements mixed and matched to populate the massive environment. “Ultimately, it was like multi-level kitbashing,” Berbasov says. “We took the original KitBash3D model kits, disassembled and customised the different elements of each asset, then reassembled the pieces back together to create a complex, high-fidelity, one-of-a-kind environment for the series. We relied upon KitBash3D as a basis for the building blocks of the environment, allowing us to create faster and free up artist cycles to focus on more creative tasks.”

**HERE'S THE SCENE
AFTER THREE HOURS
OF DREAMS WORK**

The ruins of an ancient temple, overtaken by the jungle. Entirely made on a gaming console

DREAMS FOR PS4 (OR PS5 IN BACKWARD COMPATIBILITY MODE)

BUILD IMMERSIVE ENVIRONMENTS IN DREAMS

Follow along as we build a full 3D environment in Dreams

For close to three years, I've done almost all of my artwork on a PlayStation using the creative software Dreams by Media Molecule. I work on a freelance basis and for the last year, I've been doing artwork for a feature film.

Dreams is a game engine and a creation tool that allows users to sculpt, paint, make game logic, music, and animation. All on a PS4, PS4 Pro, or PS5 in backward compatibility mode.

With Dreams, I feel more like I'm painting in 3D than I've felt with other tools. Dreams is based around SDFs (signed distance fields), which is quite different from the polygon and mesh technology most other tools rely on. Some of the benefits are not worrying about polycounts, UVs and topology.

In this tutorial, I'll take you through creating a full 3D environment in Dreams from scratch. I'll use AI-generated

references made with "Midjourney" as a guide.

I highly recommend working with PlayStation Move controllers, which allow you to create with both hands and work in XYZ without moving your camera around too much.



DOWNLOAD YOUR RESOURCES

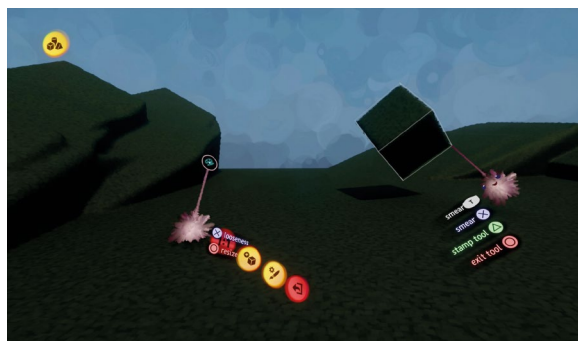
For all the assets you need go to
https://bit.ly/3D-world_288



AUTHOR

Martin Nebelong

Martin has been an artist for nearly 20 years, and for the last three years he has made artwork in Dreams on a PlayStation. artstation.com/martinnebelong



01 THE BLANK CANVAS

The first thing you see in Dreams is the default scene setup with a ground plane and a rather bland default lighting setup. Let's lay down a rough version of the ground plane to start with for this scene. Pick the cube sculpt tool, and make sure to set the looseness relatively high. By upping the looseness, the performance impact of a large ground element will be much smaller.

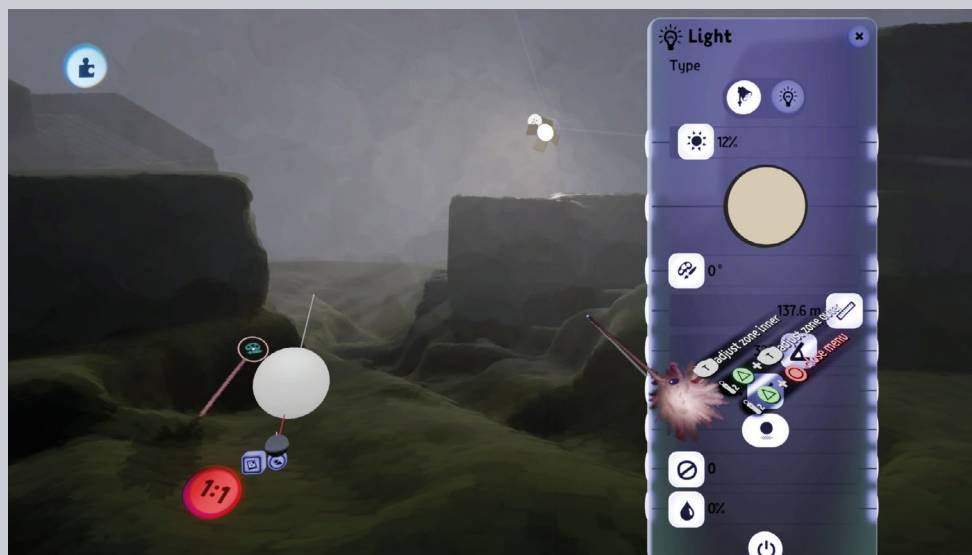


02 TURN THE LIGHT ON!

Firstly, stamp in a Sun & Sky gadget and a Grades & Effects gadget. The Sun & Sky gadget allows you to reposition where the directional sunlight is coming from quickly, and it's the only truly directional light source you can have in Dreams. By doing this early on, the scene's mood can inspire and influence your choices as you work on the environment. Tweak the colour of the light to closely match the reference, and experiment with the sun size setting, which can give a more diffused light, which we need for this scene.

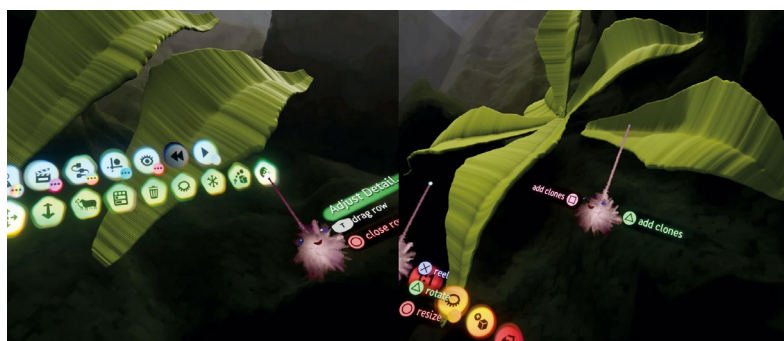
03 REFINING THE GROUND PLANE

Now that you've placed your initial lighting in the scene, it's time to start adding detail. Continue working on the ground plane element, and use whatever sculpt shape you want. For rocky, uneven terrain a smeared, loose cube might work wonders. You can even spin the sculpt shape by quickly tapping the circle on your offhand move controller, or by swiping quickly on the Dualshock/Dualsense touchpad. For grassy hills, you might find a squashed sphere with a high soft blend works better.



04 A DENSE JUNGLE

We now need a LOT of plants to get that dense jungle feeling. And lots of elements in Dreams take up gameplay thermo. You can have around 10,000 elements in your scene before the gameplay thermo reaches 100%. Still, if you imagine making a palm tree out of eight different elements, each in various subgroups, that quickly adds up as you start to clone elements.

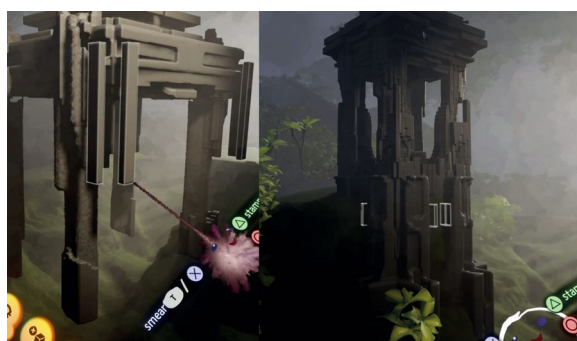


05 LET'S SCULPT PLANTS!

Since you can only use the default shapes to sculpt with in Dreams, how do we make a sculpt with ten leaves without having to spend too much time sculpting each individual element in the sculpture? One way is to pick the curve tool, set it to smear, edit the shape and make a curve as seen above. Then, you use that shape to make one smear along the curve of the leaf. You can vary the width of the leaf by scaling the shape up and down with x+rotation of your offhand (arrow up/down on the regular controller).

06 CLONE, CLONE, CLONE

Make a few different leaves while you're still scoped into the multi-leaf sculpt, and then clone away. Once that's done, you can start to populate your scene with the "leaf-clump" sculpt. Having multiple leaves in one group like this means that you might end up with a few hundred sculpts to cover the jungle instead of thousands. Make a few other plants using the same technique. Some can be more unique if you don't need thousands of them.



07 TEMPLE STRUCTURES

Now that the jungle looks more like jungle, it's time to get the temple structures in the scene. For this, you can use the square sculpt tool, set to either smear or stamp mode. Enter shape edit mode and make a longer sculpt shape. In guides, enable: Stay upright, enable mirror mode, clipped mirror, and Kaleidoscope set to 4. You can now make a convincing temple structure.



08 WHEN NATURE TAKES OVER

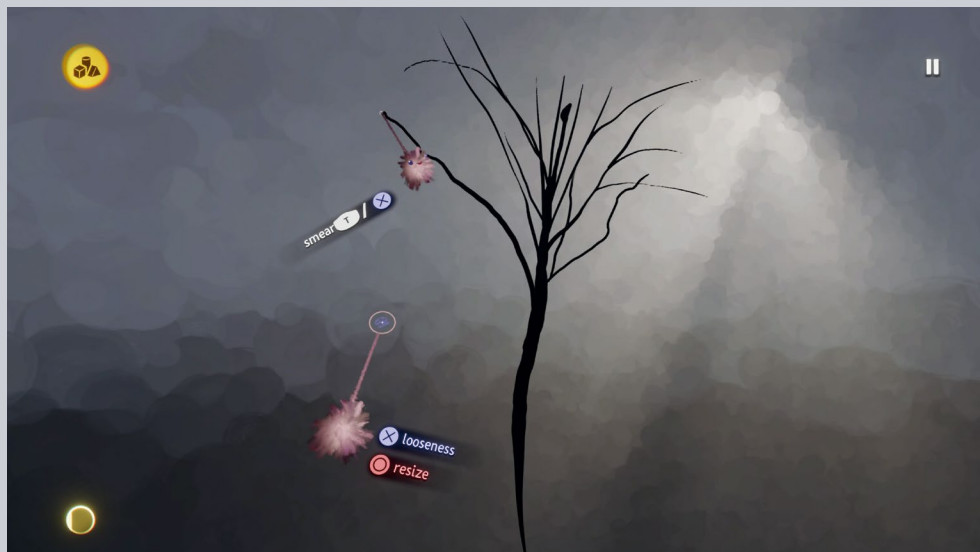
Clone the temple structure to build up the temple complex in the jungle. Scale the structure down and use it to detail areas of the temple. By reusing elements you also save graphics thermo as clones take up no additional thermo. To make the vines, switch to the curve tool, set it to smear, enable tentacle-snap in the guides and "paint" the vines moving down from the top.

Live clones!

Clones in Dreams are not instances. If you start sculpting on one, it becomes a unique element and takes up its own slot in the graphics thermo. Go to tools/clone/live clone and do live clones or use the new "liven" functionality. It turns all clones into live clones or instances, if you will.

09 TREES

Currently, the scene consists primarily of groups of leaves and buildings. To make it look more natural, we need more tree stems and branches among all the leaves. We use the same tool and guides that we just used for the vines. Curve set to tentacle snap and smear. Start with the large stem of the tree, and then hover over it to start the branches, which you then sculpt in an outward motion. If you need more details for the smaller branches, lower the looseness by holding down x on your offhand and rotating the hand.



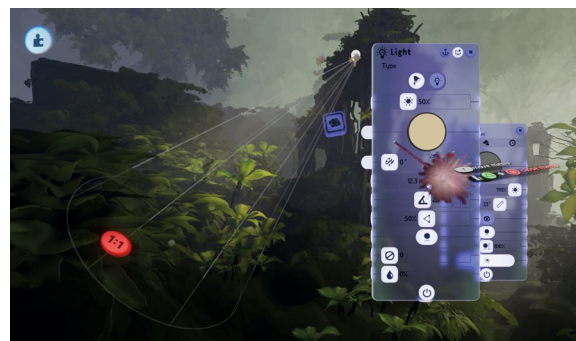
The looseness tool

While you're scoped into a sculpt, you have something called the "looseness tool" available. What this does, is a form of localized optimization of a sculpt. So say you have a highly detailed brick wall, but you don't need to see the backside? Use the looseness tool to loosen the backside, and see the thermo go down.



10 FOG

Nothing like some good atmospheric fog, so head to your tools menu and pick the fog gadget. Place it in your scene, open the properties and set the shape of the fog volume to "cube". Go in and tweak the size of the volume, and the falloff, so that the volume covers the background to middle-ground in your scene with the falloff covering the middle ground.



11 LIGHTING IS EVERYTHING

There's no advanced global illumination or ambient occlusion so you have to build those effects yourself. We use spotlights and Omni lights for this, placed strategically to simulate things like light bounce. Test out various "gobos" as well. A gobo is a texture that you put over the light, and they can make a massive difference to the surfaces they light up.

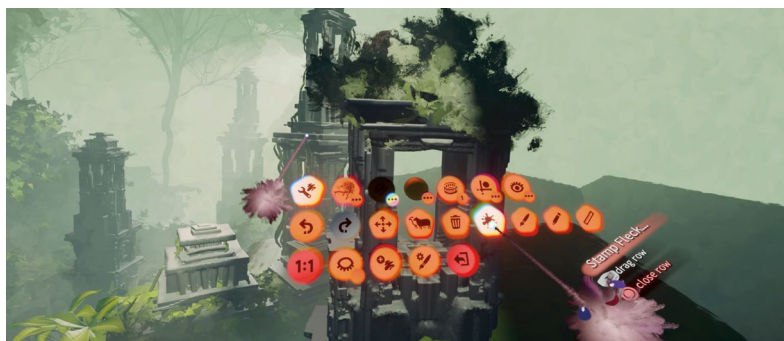
12 ADDING MORE FOG

We already have the sun and sky gadget fog, and the big background/middle ground fog gadget, but in a lush jungle, you can almost never get enough fog. It breaks up the evenness of the foliage and helps us separate shapes. So stamp in another fog gadget, keep it as a sphere, change the falloff and tweak the settings until the gadget gives a good impression of low-hanging mist. Clone the fog gadget to other areas of the scene too. Notice how spotlights influence fog volumes, which don't always produce a nice effect. If so, tweak the fog density or the strength of the light until you see an improvement.



13 ADDING VARIATION

To add variation, combine some of your leaf elements with the tree stems, and use some custom paint strokes to add additional leaves to your element. You can also experiment with the new "convert to paint" function to combine multiple leaf elements into one element. Use the sculpt detail tool to lower the detail level of the paint object, though, as it quickly takes up a lot of thermo.



14 LET'S PAINT

A great way to add even more "chaos" and variation to your scene is to use paint. First, select paint mode, then select the "stamp fleck" mode and up the scattering. Next, select a fleck type that you think works well for your scene, and then use your tool to quickly stamp those scattered flecks into your jungle. Dreams is different than most other 3D tools in the way it approaches 3D building as it's digital painting in 3D. So use that to your advantage and suggest details without worrying about actually meticulously sculpting them...



15 GRADES & EFFECTS

Time to do some final grading of your scene now that you have your light sources, effects and elements in the scene. Let's turn the sharpness up for our scene, and let's set the bloom and lens flare low. If you accidentally (or on purpose) add two Grades & Effects gadgets to your scene, each will influence the scene by 50%. Experiment with the shadows/midtone/highlights colour, which can alter the look of your scene quite a lot. I sometimes find that the overall look of my scene can improve if I turn down the exposure and turn up the strengths of my light sources.

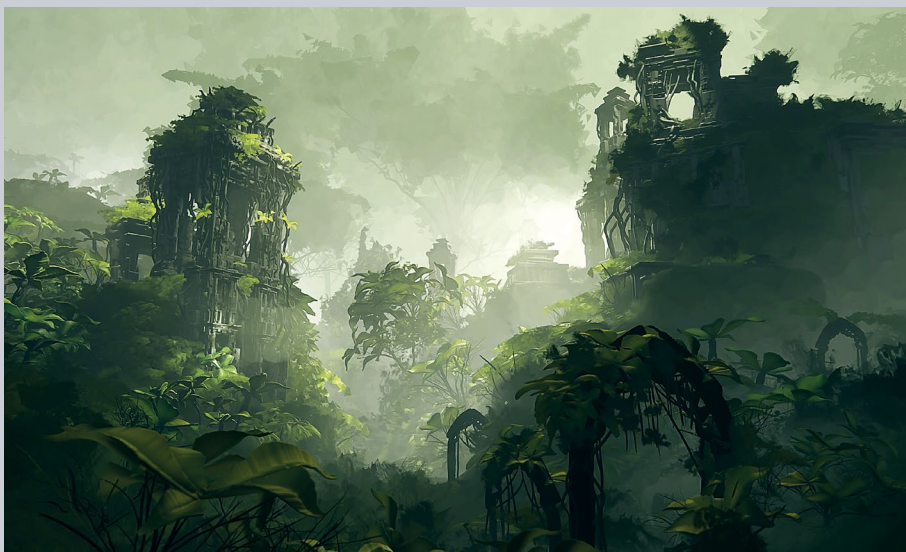
16 FRAME YOUR SCENE

If you didn't already add a camera to your scene, now is the time! Stamp a camera in a fitting spot in your scene, and scope into the camera to get a preview of what it looks like through the lens. If you're using the dualshock or dualsense controller, you can change the FOV of the camera while you're scoped into it by pressing up or down on your directional keys. If you're using the move controllers, you have to scope out of the camera and open the camera settings to do it through here. Play around with the aperture and focus distance until you find a setting that works well. Remember to hide the imps in the camera settings. Alternatively, you can hide them through the global settings gadget.



Getting a warning about spotlight shadows?

There's a pretty low limit to how many shadow casting spotlights you can have active in your scene at the same time. So whenever you make a spotlight that doesn't need to cast a shadow, turn that off in the light settings.



17 CLOSING THOUGHTS

In just a few hours of work, we have a full 3D environment to explore. I find that doing everything in one program saves a lot of time, which in turn means a bigger creative output for me. The visual fidelity might not be on par with what you'd get from an engine like UE5 with its beautiful lumen lighting and highly detailed nanite sculps. But I personally really enjoy the workflow in Dreams and find it to be a very powerful tool for illustration work, concept work, or quick interactive mockups for clients. If you have any further questions on my Dreams workflow or the work that I do, don't hesitate to reach out to me on social media.

BLENDER | TURBO TOOLS ADDON

TURBO BOOST YOUR RENDERS

Speed up your Cycles renders at the touch of a button!



AUTHOR

Michael Campbell

Michael is the owner of 3d-illusions where he works as a 3D contractor and creates Blender addons and 3D assets.

<https://3d-illusions.co.uk>

Fast rendering times are 3D's holy grail, and thanks to hardware being preposterously overpriced, the proposition of upgrading is likely to induce a cold sweat from deliberating over which non-essential body part will command the highest price on the black market. Furthermore, as energy prices rocket in tandem with computer hardware needing more and more power, it could be a good time to either consider getting a life-size hamster wheel to feed electricity back into the national grid, or alternatively, investigate if there's anything that can be done from a workflow perspective to dramatically cut render times. Even for those who already own the latest and greatest hardware, getting the fastest render times possible is always a top priority.

The problem is, squeezing everything possible out of hardware can require a deep understanding of how render engines work. Settings such as samples, bounces, clamping, importance maps, passes, filters, etc all need to be carefully set, before even considering moving on to laboriously setting up complex post-processing networks to make the best possible use of the different types of data that render engines can provide. This can quickly turn into a huge

amount of repetitive work, as all of these will need to be re-created for each new scene if the best results are to be obtained.

Step in Turbo Tools, a full rendering pipeline addon used by studios globally. It includes 'Turbo Comp' (real-time compositing, compositor caching, publishing tools and other things to make life easier), but most importantly for this tutorial, Turbo Render. We'll learn how to use Turbo Render to reduce the robot scene's render time from around seven hours without denoising to as little as two minutes (GTX 1070)!

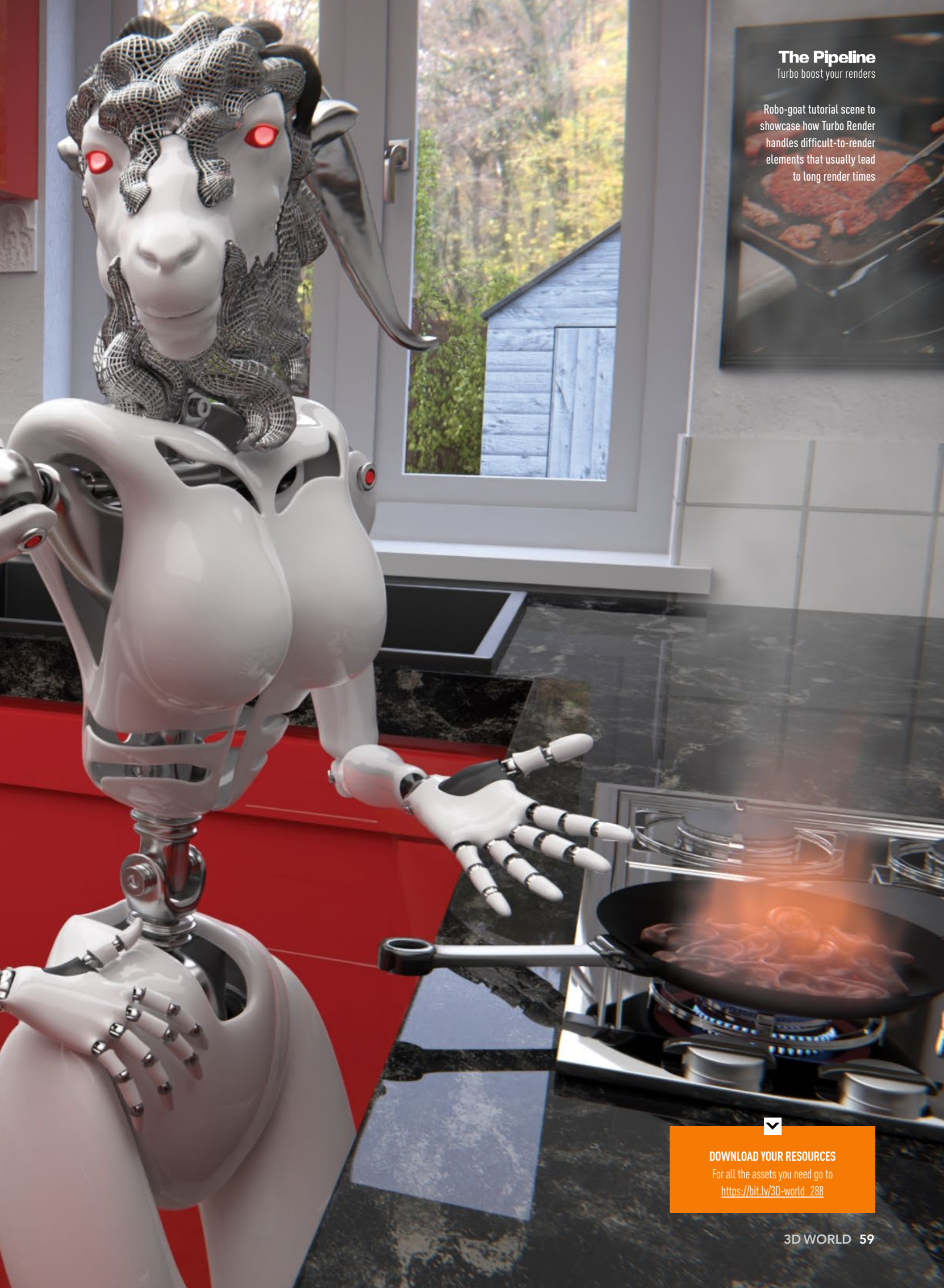
Before beginning the tutorial, be sure to download the robo-goat scene file. Not only does it include a fully rigged robot, it's also been set up to have elements that standard denoisers require much longer render times to preserve. The main culprits are:

- High-frequency textures – The marble and wooden floor's finely detailed textures are notoriously difficult or often impossible for denoisers to preserve, even with long render times.
- Detailed reflections – Even after ten minutes the reflections on the robot were almost completely lost with OIDN.
- Indirect lighting – Areas of an image that are predominantly indirectly lit (light that has bounced off another surface) will be the noisiest. This leads to a lot of detail loss when denoising. Pay attention to the murals under the wall cabinets.
- Individual passes – We use a volume and emission pass for fine control over their contribution.



**WATCH
THE VIDEO**

https://bit.ly/3D-world_288



The Pipeline

Turbo boost your renders

Robo-goat tutorial scene to showcase how Turbo Render handles difficult-to-render elements that usually lead to long render times



DOWNLOAD YOUR RESOURCES

For all the assets you need go to
https://bit.ly/3D-world_288

Persistent Data

When rendering the same scene many times, turn on Persistent Data in the render panel's Performance section. This will avoid the 15-second wait before rendering by keeping the scene in memory between renders.

01 SET UP

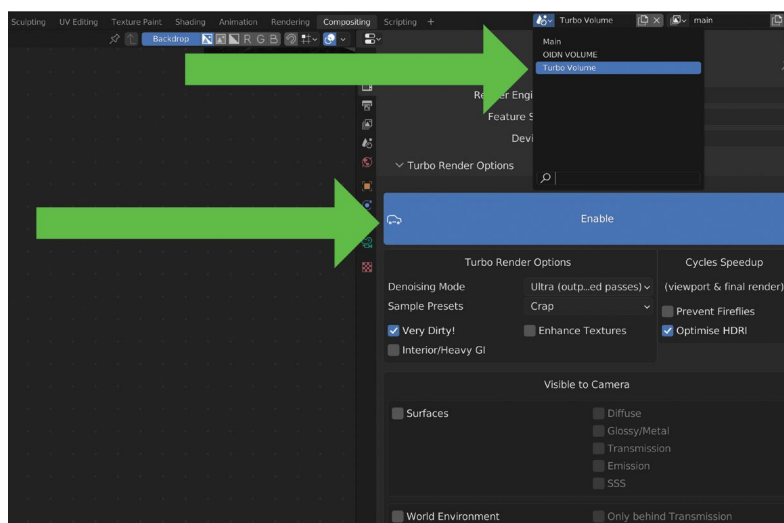
Open the robo-goat scene file provided, making sure the file explorer's Load UI option is enabled. The blend file contains three scenes. The first one called 'Main' contains everything except the smoke and fire. The other two scenes contain the volume, one which renders using Turbo Render, and one which renders using the standard OIDN denoiser. Check that Turbo Render is enabled in the Turbo Volume scene's render properties, and then head back to the Main scene. Importantly, be sure to set a valid cache location in the addon preferences.

02 RENDER A BENCHMARK SCENE

Once loaded, head over to the compositor workspace and create a new slot in the image editor. Call it 'OIDN benchmark'. This will be used later to compare the Turbo Render results when rendering for a similar amount of time. The sample settings are already set up, so make sure that Turbo Render is turned OFF in the render panel for now, and hit render. It should be quite quick, but the results won't be great. When the render completes, create another render slot and name it 'Turbo'.

03 CHOOSE DENOISE MODE

The denoise mode consists of several options: Draft/Fast, Medium, High, Ultra. The lower settings are the fastest to process,



01

and the higher settings take longer. Generally, the noisier the image would be when rendering for a similar amount of time without denoising, the higher the setting should be used. The Ultra option has the added benefit of cleaning the individual passes so they can be used in existing compositor setups that need them (the only addon able to do this thanks to the 'Turbo Comp' caching system). Set to High and click the big Enable button.

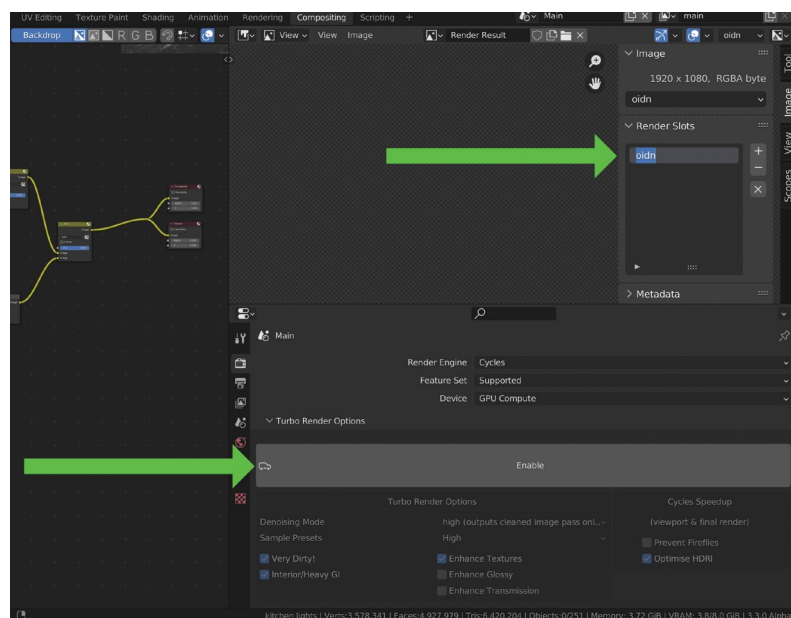
04 SAMPLE PRESETS

Often setting up samples can take a lot of trial and error and a good understanding of how the render engine works under the hood. Turbo Render removes this hassle by providing several options to choose from. The options include: Crap, Medium, High, Ultra, Insane and User. Lower settings

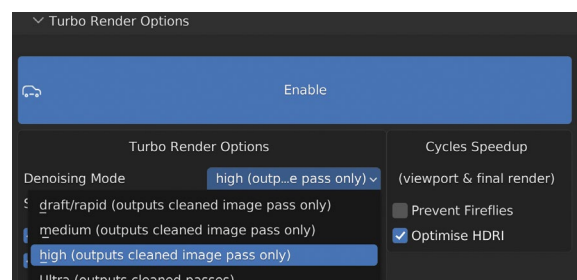
are fast, higher settings are slow, and User will use your own sample settings instead of the presets. Crap is perfect for extremely fast draft renders and scenes that render quickly with little noise, whereas higher settings should be used if the lower settings don't produce the required quality. Choose High.

05 OTHER DENOISING OPTIONS

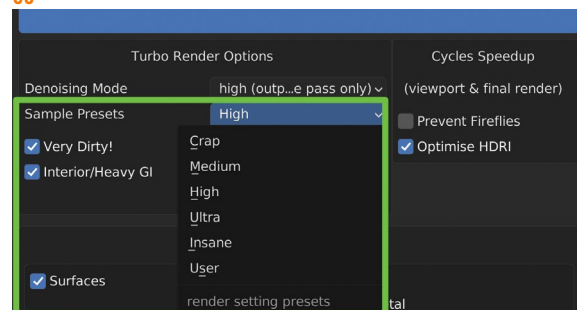
Firstly, enable the 'Very Dirty' option. This option should always be enabled unless a very high sample preset is used (Ultra or Insane). Also enable the 'Interior/Heavy GI' option, as this should be used for scenes with a lot of indirect lighting (such as this one). It can also be used if there's a loss of detail in reflections and geometry in the rendered image. Lastly, enable the Enhance Textures option. This



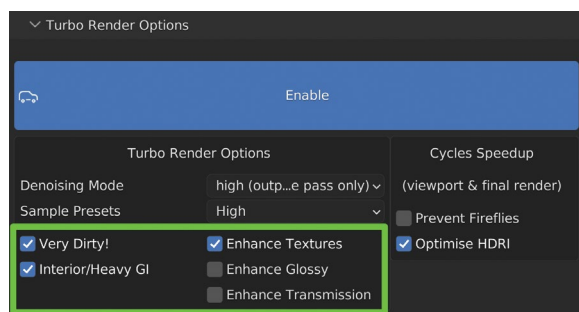
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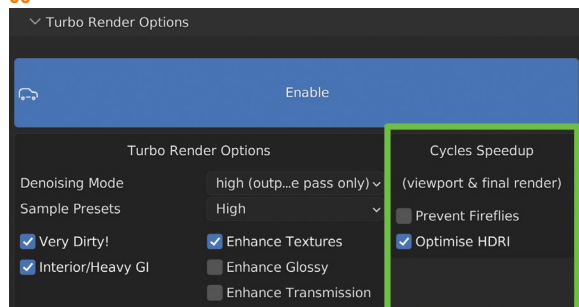
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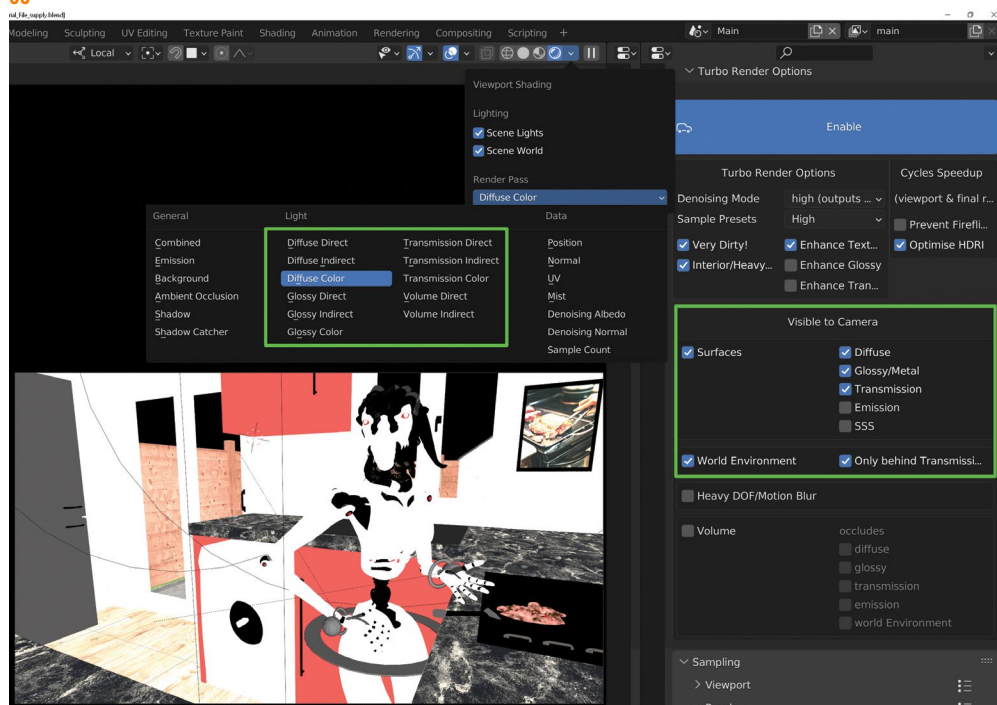
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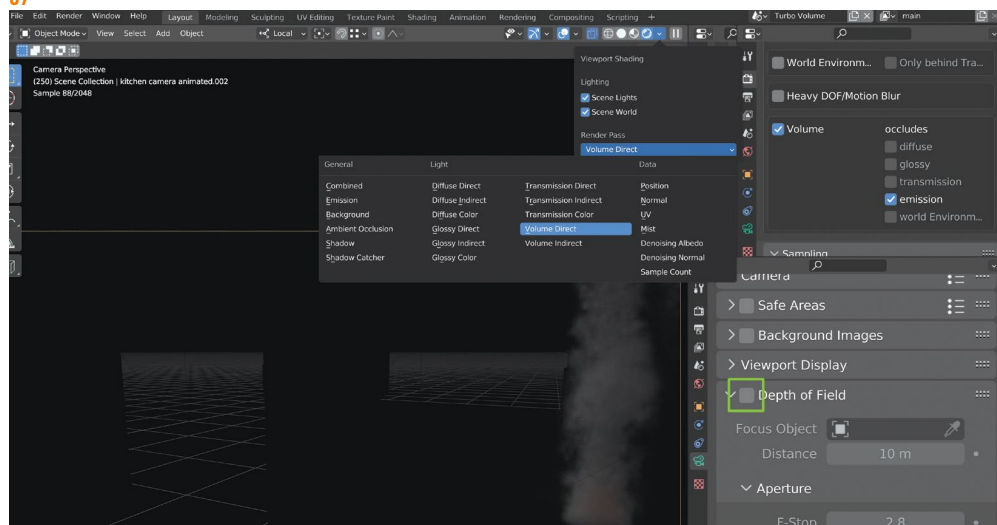
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option will make sure the finest texture details are preserved, even at low samples.

06 CYCLES SPEEDUP OPTIONS

To help Cycles go faster there are two options, 'Prevent Fireflies' and 'Optimise HDRI'. The Prevent Fireflies option is used to avoid bright white pixels and long rendering times in scenes containing extremely bright or small light sources. Leave this unchecked, because to reduce render time further, this scene has intentionally low lighting which will be corrected in post. The 'Optimise HDRI' option reduces the amount of memory HDRI textures above 4K will use during rendering. This scene's

environment is 8K, so ensure it's checked to save some VRAM.

07 SPECIFY VISIBLE SURFACES

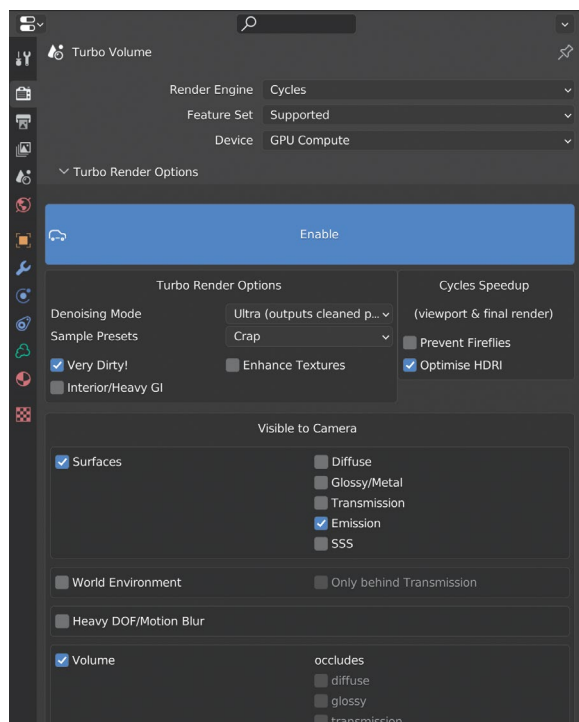
To ensure the denoising phase of rendering is as fast as possible, it's important to let Turbo Render know which material types will be visible to the camera. If unsure, go to the layout workspace, turn on viewport rendering, and then in the Viewport Shading options choose: emission, diffuse colour, glossy colour, and transmission colour. Any that aren't completely black, put a tick in the associated checkbox. SSS doesn't have a pass, but leave unticked as this scene doesn't contain any. There is a HDRI, so tick World Environment, and tick Only behind Transmission, as it's only visible through glass.

08 MOTION BLUR, DOF AND VOLUMES

If a scene has heavy depth of field or motion blur, Turbo Render will make additional modifications to the techniques it uses to avoid noise in those areas. This scene doesn't have either, so we can leave them unchecked. There are no volumes in the main scene, so leave all of those options unchecked. For future reference, similarly to the surfaces, the volume passes can be checked in Viewport Shading options if unsure. The 'occludes' options should be checked for each surface type that is visible through a volume. This notifies Turbo Render to make additional modifications to its approach.

09 SET UP THE 'TURBO VOLUME' SCENE

Head over to the 'Turbo Volume' scene again, and this time go to the 3D viewport and enable rendered mode. As before, go to the Viewport Shading options render pass dropdown; this time it shows there's only emission and volume passes populated. With this in mind enable the 'Emission' surface and 'Volume' checkboxes. Also enable 'emission' under the occludes heading, as there is volume between the fire and the camera. Leave samples as 'Crap', because volumes clean well at low samples when they don't have fine details. >



09

> 'Ultra' will be used this time to use Turbo's party trick.

10 TURBO RENDER!

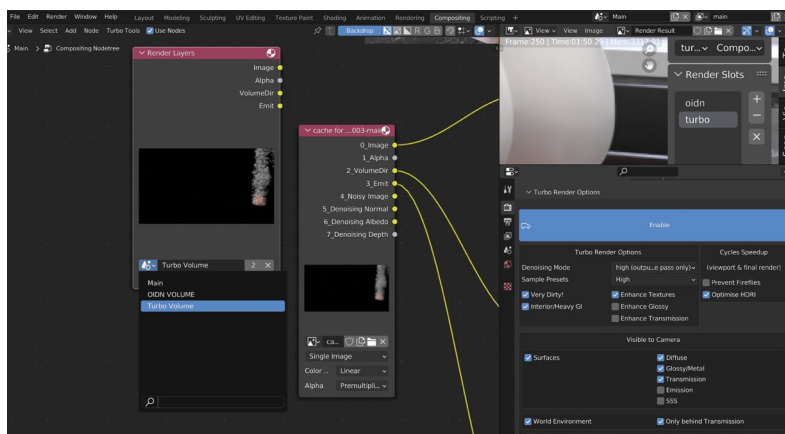
Head back to 'Main' scene's compositor workspace, change the bottom Render Layers node to the 'Turbo Render' scene, and in the image editor, ensure the 'Turbo' render slot is selected. Check the enable button is on/blue and render again. On a GTX 1070 this takes around two minutes. On new hardware, for example an RTX 3070, this should be in the realms of 30 seconds. Those lucky enough to be sporting a 3090 Ti may find themselves being transported back through time and space, screaming '1.21 GIGAWATTS!'.

11 REFLECTIONS

When rendering completes, set the image editor to full screen by hovering the mouse over it and pressing Ctrl and Spacebar simultaneously. Zoom in on the robot and pay attention to the reflections of the arms and hands. The reflections are defined enough to be able to make out the fingers and other details of the hands and arms. Now select the OIDN render slot. All of the details in the reflections are completely lost, in fact even when rendering for ten times longer, OIDN still couldn't preserve the reflection details

Presets and animations

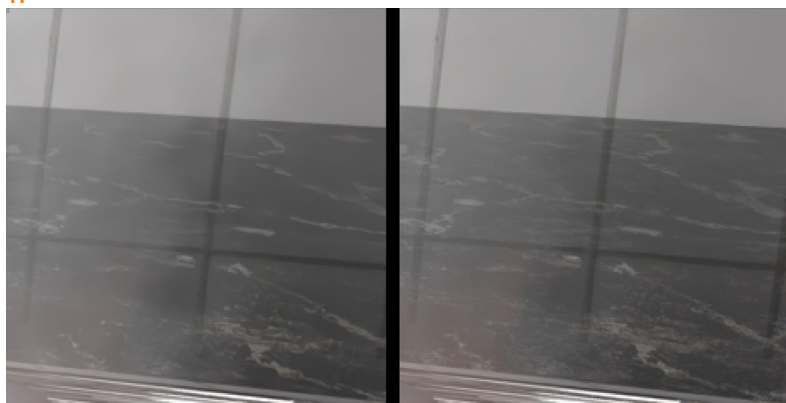
The sample presets are optimised for stills, so for noisy animations, use at least the 'High' sample preset with the interior/heavy GI option enabled. Volumes can generally be rendered in seconds with 'Crap' sample mode and 'draft/rapid' denoise mode.



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admirably. Notice the same issue with the fridge.

12 TEXTURE DETAIL

Thanks to the Enhance Textures option, the difference in this respect is apparent even from a distance, particularly on the wooden floor. Zoom in on the floor to the right of the fridge. Now when switching between the two renders, it's immediately apparent that all the fine wood grain is preserved by Turbo, but almost completely lost with OIDN. The kitchen work surface suffers even more, with virtually all of the fine marble details lost when compared to Turbo. Even

after a 30-minute render, standard denoisers generally fail with textures containing this amount of fine detail.

13 COMPARE GEOMETRY AND SHADOW

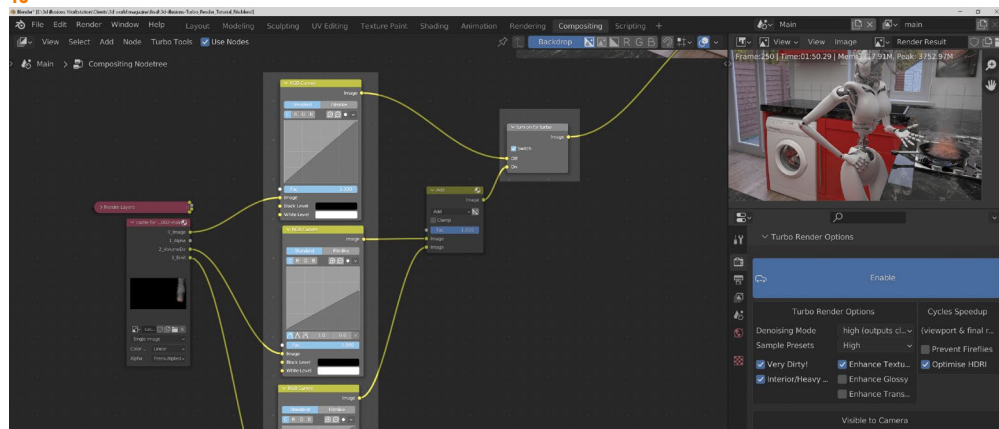
There are a few key places that show a considerable difference in quality. Firstly, zoom in on the mural to the bottom left-hand side of the wall cabinet. Flicking between the OIDN and Turbo render slots should reveal a considerable increase in detail with Turbo. The washing machine text is crisper, and the all-important goat's beard is crisp enough to reveal the outside



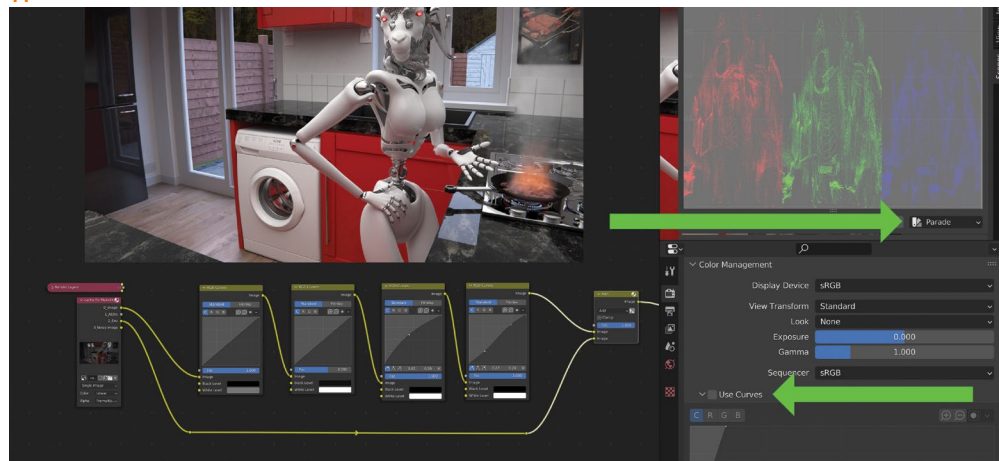
Re-rendering individual scenes

If you need to re-render a particular scene for any reason, rather than rendering all of them again, mute the Render Layer nodes you don't want to re-render before pressing f12 to then only render the un-muted ones.

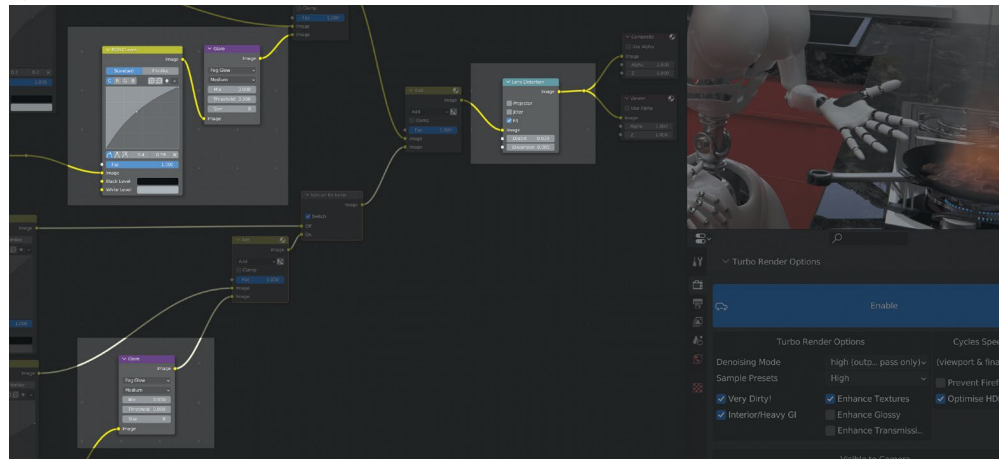
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environment more clearly. Another area is the plug socket to the right of the fridge, the shadows cast by the wall and under the switches are clearer, and the screws retain their shape better.

14 PARTY PIECE!

Turbo's Ultra mode, which was enabled in the 'Turbo Volume' scene, provides the opportunity to do something not possible with other denoisers or addons. Tick the Switch node's 'on' checkbox, and the individually cleaned volume and emission sockets will be used instead of the image socket. Using the connected RGB Curves nodes, increase the volume and emission's contribution individually to taste. Other solutions can only denoise the main image, so this was not possible earlier due to these passes still being noisy.

15 SET THE BLACK AND WHITE LEVELS

Under the Color Management section, un-check Use Curves. The image will become dark, so drop down four RGB Curves nodes between the main scene's image output and Add node. Use the first to set the white level to a grey, the second to increase the black level very slightly, then reduce its Fac until it looks good. Use the third to increase the midrange, and the fourth the contrast. Avoid clipping by using the parade scope to check blacks don't go below 0 and whites above 100.

16 OTHER LEVELS AND EFFECTS

Add another RGB Curves node between the 'Env' socket and the Add node, then adjust its white level until its trees match the 3D tree's brightness. Adjust the volume's existing RGB Curves nodes until the brightness is to taste. Next, add Glare nodes after the Env's and emit's RGB Curves nodes, set to Fog Glow and lower the threshold until it looks good. Finally, add a Lens Distortion node before the Reroute node that precedes the Viewer and Composite node, add a bit of distortion and dispersion, and tick Fit to ensure the distortion doesn't cause black pixels. ●

GET STARTED WITH DYNAMICS IN CINEMA 4D R26

Cinema 4D R26 ships with a new dynamics system for artists to learn. Get ahead of the pack with these tips



AUTHOR

Mike Griggs

Mike Griggs is a veteran creator who has a passion for explaining the process of digital content creation to new artists.

www.creativebloke.com



Cinema 4D has long been the mainstay of motion design since its inception. Artists use Cinema 4D's MoGraph system to easily create work that would be difficult in other 3D applications. Cinema 4D also comes with a full-featured dynamics system, allowing hard and soft body dynamics to be applied to geometry and react as if they would in real life.

The dynamics system in Cinema 4D, while comprehensive with the range of features it came with, always had a couple of caveats compared to simulation systems in other applications. For a start, there were a lot of controls, and during simulation iteration, when developing, incremental changes on one of the (many) sliders could yield a completely unexpected result.

Second, the simulation system was slow and did not leverage the full potential of modern

computers with their multiple cores and powerful GPUs.

However, the team at Maxon has been hard at work rewriting the Cinema 4D code under the hood. With the advent of Cinema 4D R26, Maxon has introduced a new dynamics system, which intends to be both more straightforward and more predictable for artists to implement, while at the same time using the power of the GPU to help accelerate the simulations, allowing artists the ability to create more complex simulations.

This is not to say that the legacy dynamic system was terrible. Many artists have (and still do) create amazing simulations with it daily, thankfully though the Maxon team has been their typical wise selves and left the old system accessible within the Simulate and Tag menus.

The new dynamics system is also more flexible regarding what

Cinema 4D objects can be made part of a simulation. An artist no longer has to use a Cloth Object or convert a generator object to a polygonal object. With the new dynamics system, an artist has the freedom to work with simulations within Cinema 4D exactly how they would expect with no workarounds.

It is worth noting that the old Bullet dynamic system and the new system are incompatible. However, both can work independently in the same scene.

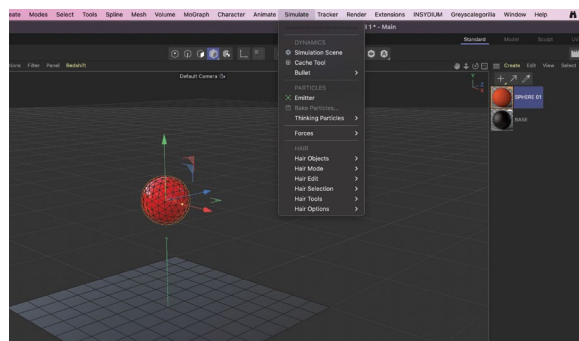
The following tutorial is intended as an initial introduction to some of the critical features of the new dynamics system for those artists new to Cinema 4D and simulation systems, and for those artists who have been using Cinema 4D and want to adopt the new dynamic system in their workflow, as the legacy system was too fiddly or they used solutions from other applications.

**DOWNLOAD YOUR RESOURCES**

For all the assets you need go to
https://bit.ly/3D-world_288

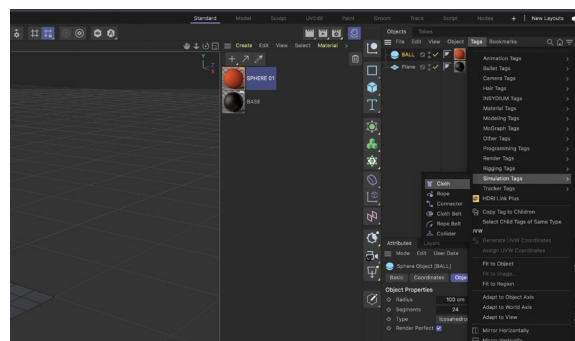
Using the Cloth Surface Object

The Cloth Surface Object Generator should not be confused with the Cloth Tag. The Cloth Surface Object can sub-divide a surface as if it were material, and 'thicken' an object without adding any extra geometry to the simulated object via traditional modelling techniques, which can also overcomplicate the simulation. Be mindful, though, that the Cloth Surface Object will affect the simulation and should always be applied to an object before simulation work can begin.



01 LOCATE THE SIMULATION TOOLS IN THE CINEMA 4D UI

The first thing that is handy to know when using the new dynamics system is where the core elements are in the UI. The main 'Simulate' menu holds a couple of core elements for the new and legacy (Bullet) dynamics system. When an object is selected, the Tags menu in Cinema 4D shows the Simulate tags that can be applied to an object (again, along with the legacy Bullet ones). The overall settings for Simulations can be found in the Project Settings Attributes palette.

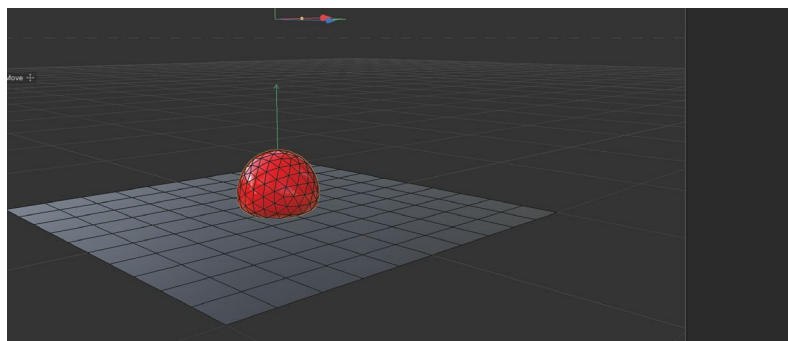
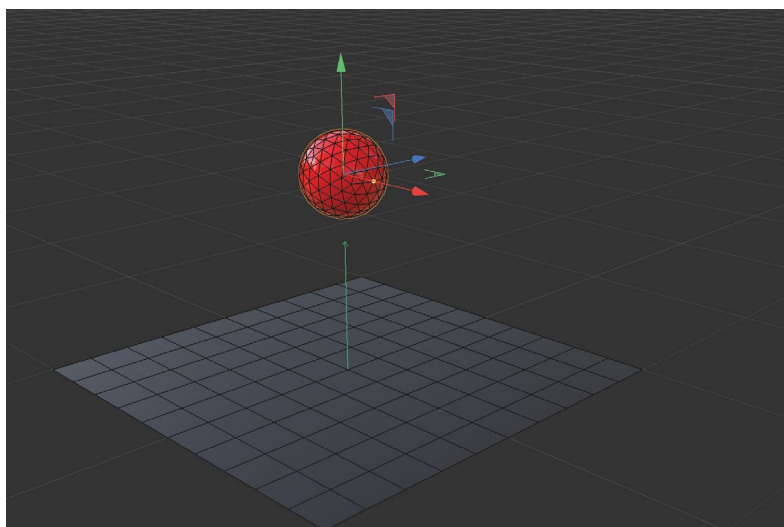


02 CREATE A SIMPLE SIMULATION – PART 01

Let's have a look at how to create a simple simulation of a ball bouncing on a plane. Each of our two objects has to be defined as a task by the simulation. To assign a task to an object, a simulation tag is used. There are five different simulation tags we're using here: for the ball, we need to apply a 'Cloth' Tag. The Cloth Tag does not mean we are telling Cinema 4D that we wish the object to be thought of as made of fabric; instead, 'Cloth' is the term Cinema 4D gives to an object that will 'react' to its surroundings.

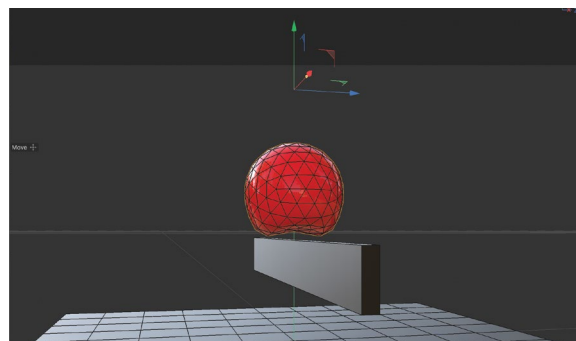
03 CREATE A SIMPLE SIMULATION – PART 02

To start a simulation, the artist presses the play key. If that were to happen with only the Cloth Tag applied to the ball, the ball would fall and pass straight through the plane object. This is because the plane has not been assigned a Tag that the simulation looks for when performing its calculations. While the Cloth Tag makes the object it is applied to 'active' within the simulation, using a 'Collider' Tag to the plane object makes it passive in the scene and an element that active objects can react against.



04 CREATE A SIMPLE SIMULATION – PART 03

Now, when the simulation is run, move the timeline back to the scene's beginning and press play. The ball will fall and bounce convincingly on the plane object. If the ball appears too 'squishy', this is easy to adjust using the Cloth Tag attributes. Changing the Bendiness value of the Cloth Tag attributes will have a marked effect on the ball's appearance as it falls down. The lower the value, the 'stiffer' the ball will appear. The same is also true for the Stretchiness parameter.

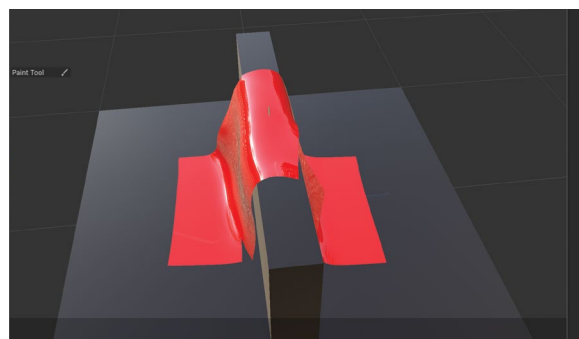
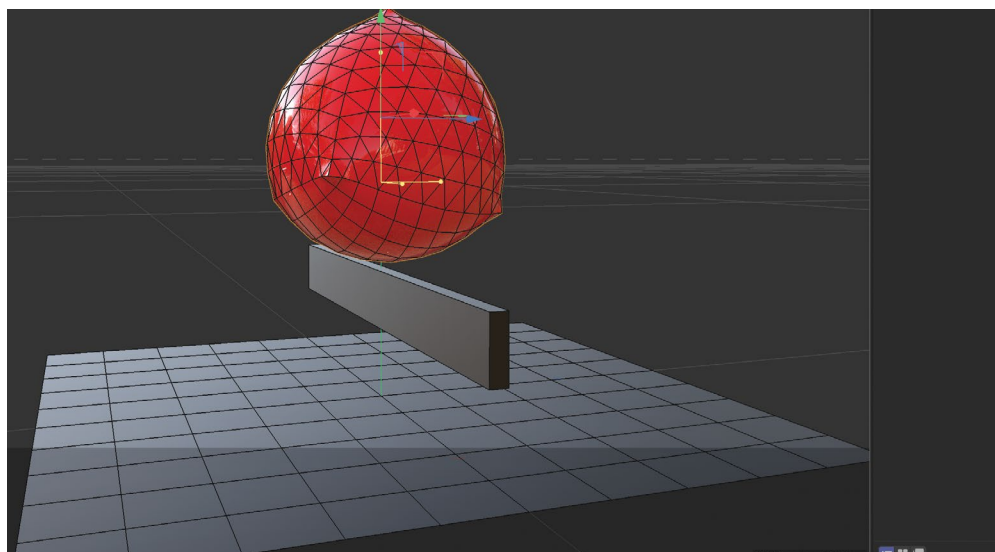


05 DEFORM THE CLOTH OBJECT – PART 01

The ability to deform a Cloth Object after it has collided with a Collider Object allows an artist to art direct the look of the simulation. Activate the Bend and/or Stretch controls under the 'Plastic Deformation' of the Cloth Tag attributes palette. This enables the simulation to ensure that once a Cloth Object changes shape, the resultant impact deforms the object permanently.

06 DEFORM THE CLOTH OBJECT – PART 02

The most fun way to deform an object is with the 'BALLOON' attribute. Applying this to an object makes it take on the appearance of an inflated object. With the 'OverPressure' set to 1 in the BALLOON properties, the Cloth Object doesn't appear to act or look too different. Increase the Overpressure to 2, and the Cloth Object will inflate within the time set in the 'Expansion Time' setting, which can create comedic results – as can be seen with this pyramid object grossly inflated with an OverPressure value of 10.

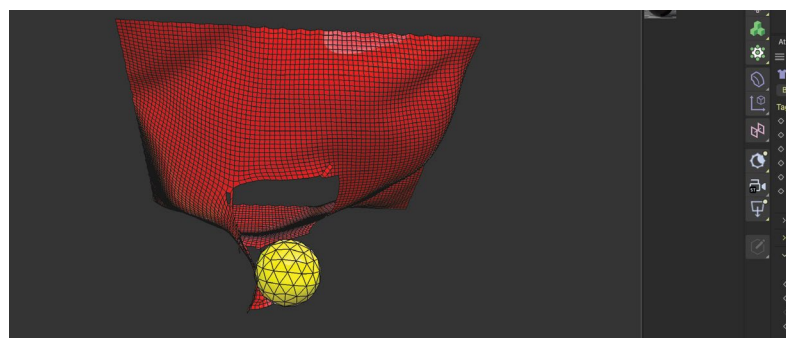
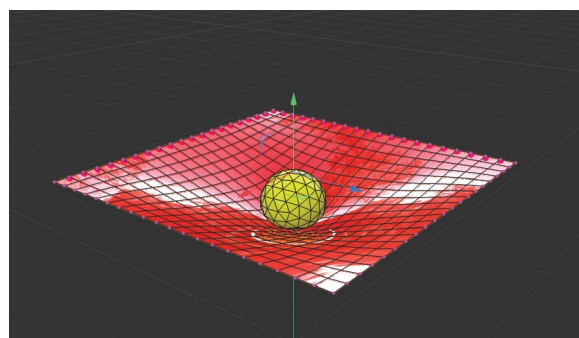


07 TEAR AN OBJECT

Previously, the Cloth Surface Object had to be applied for an object to tear. With the new dynamics system, all that is needed is the application of a Cloth Tag on an object and the enabling of 'TEARING' on the Cloth Tag Attributes palette. There are two main attributes when using Tearing, the first 'Tear Past' sets the value of when the tear occurs, and the second 'Tear Guiding' defines the angle within the polygons where the tear should occur. This can also be defined by a Vertex Map.

08 CONSTRAIN

While making objects fall and bang onto things is great fun, not all simulations require an object to fall. It is possible to select part of a polygon object and use it to fix points all through the Cloth Tag. In the image shown above, the plane object has been converted to a polygon object. The end vertices have been selected using the standard model selection tools. In the Cloth Tag's 'Dresser' attributes, the 'Set' button is pressed for 'Fix Points', which fixes those vertices in space, allowing the plane to drape over the Collider Object.



09 USE WITH OTHER CLOTH OBJECTS

Here a square plane object has been converted into a polygonal object and has had all of the vertices on its outer edges 'Fixed' in 3D space. A sphere has been added to the scene and given a Cloth Tag. When the simulation is activated, the plane object both reacts to the gravity as well as the ball falling onto it, giving a complex but easy-to-create simulation.

10 MORE COMPLEX ANIMATIONS

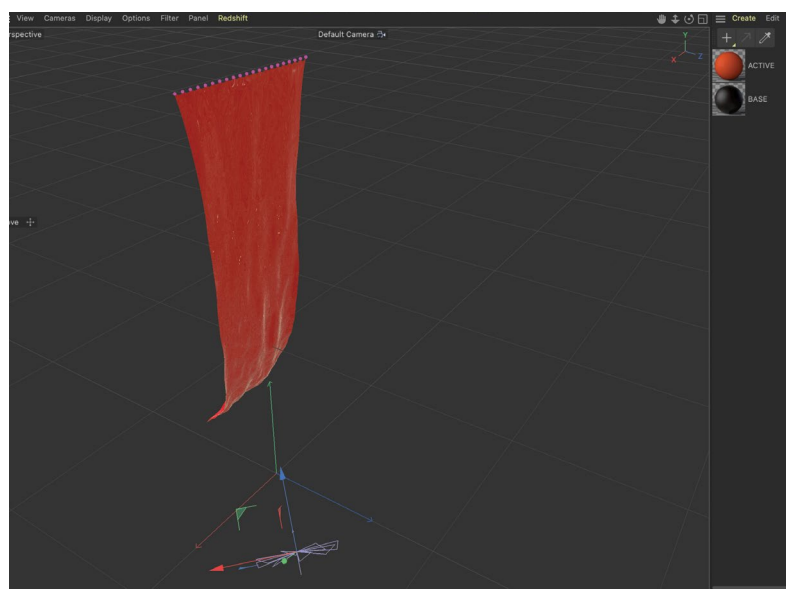
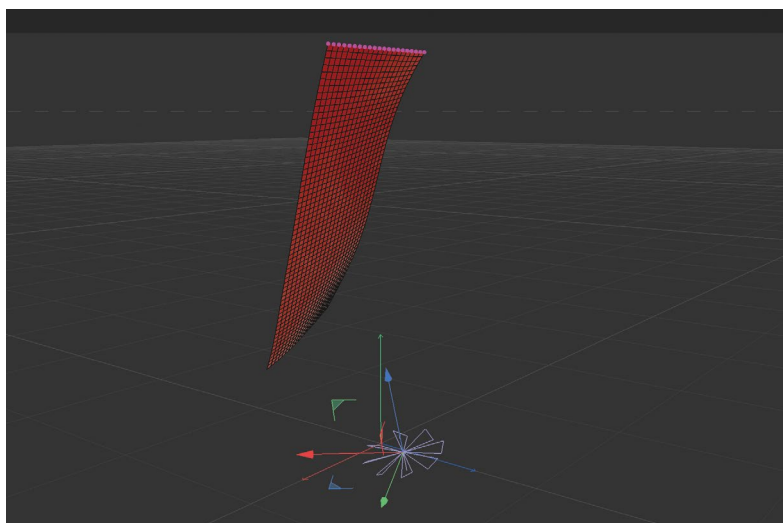
Knowing that Cloth Objects can be used as advanced collision objects allows for more complex animations, such as the tearing of the plane object in the previous example as the ball passes through it. The plane has been subdivided twice to give a more convincing tear in the geometry. Be mindful that when subdividing geometry, for example, the simulation will appear different than it did with a lower density mesh. Always create simulations with the correct geometry density for the scene requirements.

Caching simulations

Simulations are computationally intensive. Even though they are quicker with the new system, they still need to be run every time, unless they are cached. This saves the simulation in its current state. To cache a scene with simulation objects, select a Cloth Tag and go to the 'Cache' tab in the Attributes palette and choose Cache Scene. This will save the simulation data within the file and allow playback of the simulation without running the simulation every time. If a simulation parameter is changed, the scene will need to be cached again.

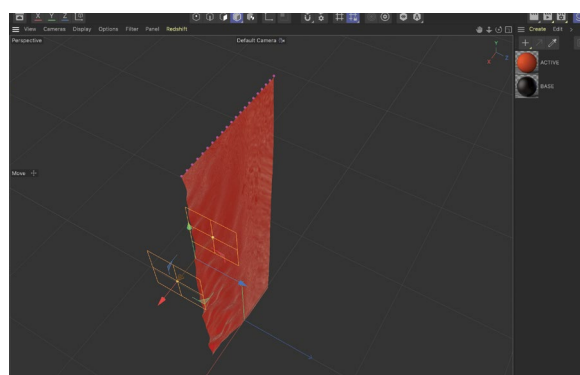
11 USE FORCES - WIND PART 01

While simulations can be used to significant effect to create animations and geometry that would be hard to model, giving motivation to a scene through a force is a great way to art direct the simulation as well as give it a bit of life. Most of the Force elements, such as wind, work with both the new and legacy simulations. The Force objects are available in the main Simulate>Forces menu. In this example, a wind object has been added to the scene to blow the hanging polygon object.



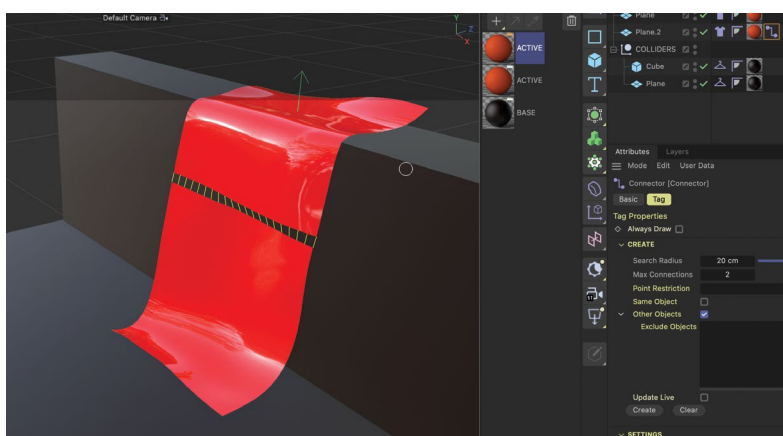
12 USE FORCES - WIND PART 02

The wind object has a range of options to help make the deformation even more convincing. The polygon object has again been subdivided to show the impact of what happens when Turbulence is added and adjusted to the wind object. For this example, the wind object mode is set to 'Aerodynamics Wind', but there are two other options, Acceleration and Force, which affect the simulation differently. As can be seen, the Turbulence has an effect by adding ripples into the polygon object, which has been enhanced by the earlier subdivision.



13 USE FORCES - WIND PART 03

As with most elements within Cinema 4D, Fields can be used to help control a simulation. Force objects such as wind can have a Field object applied to determine the influence on the simulated object. The wind object has had a Linear Field created from its Field Tab attributes in the example shown. This has been lined up with the simulation object on the side closest to the camera. As can be seen, the wind object, including the Turbulence, is only affecting the near side as controlled by the position of the Linear Field.

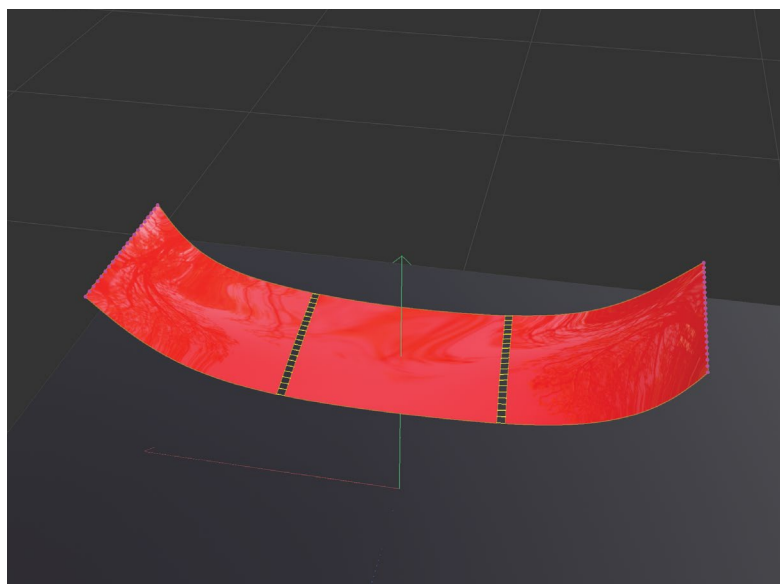


14 CONNECT OBJECTS

Cloth Objects can now be connected easily within the new dynamics system using the Connector Tag. When applied to an object with a Cloth Tag, the Connector Tag will try and attach those objects closest to it as defined by the Connector Tag's search radius. Press the 'Create' button on the Connector Tag attributes to connect two objects. The Connectors will be seen as yellow lines between the chosen objects. The number of connectors can be adjusted in the 'Max Connections' to allow greater 'flexibility' or more rigidity in the connected object interactions.

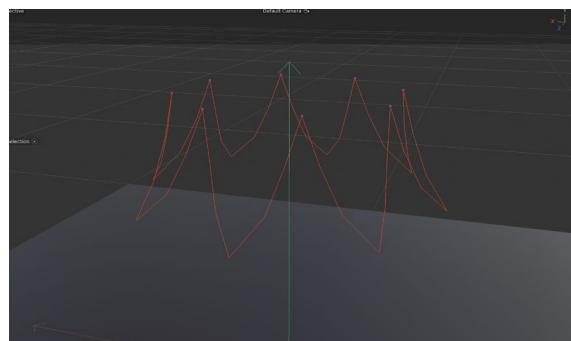
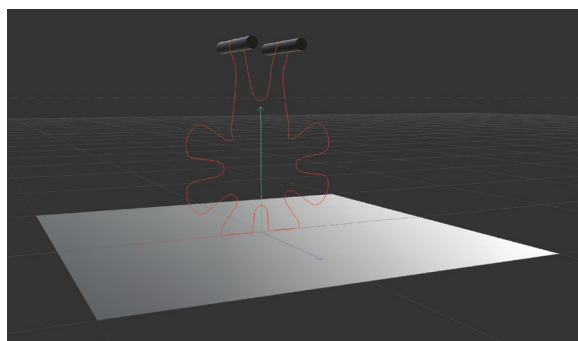
15 WORKING WITH CONNECTOR TAGS

Connecting objects is the first step to creating clothing out of geometry. Be mindful, however, that one Connector Tag will not 'magically' make a working coat. Thought needs to be applied when connecting objects. In the example shown, the Connector Tag is applied to the centre polygonal plane. It then connects to the two outer polygonal planes. If the Connector Tag had been placed on either of the external objects, the search radius would had to have been increased to connect the objects, and would have potentially created too many connections.



Using simulations with Cloners

One of the best things about the new simulation system in Cinema 4D is how it can be used with generator objects, including Cloners. For example, a simple plane object can be placed inside a Cloner, then a wind object used to blow the plane objects against some Collider Objects. This works just as expected, as long as the Cloth Object is applied to the Cloner object and the Instance Mode is set to 'Instance'. This simulation would be an excellent start creating fallen leaves being blown in the wind.



16 DYNAMIC SPLINES – PART 01

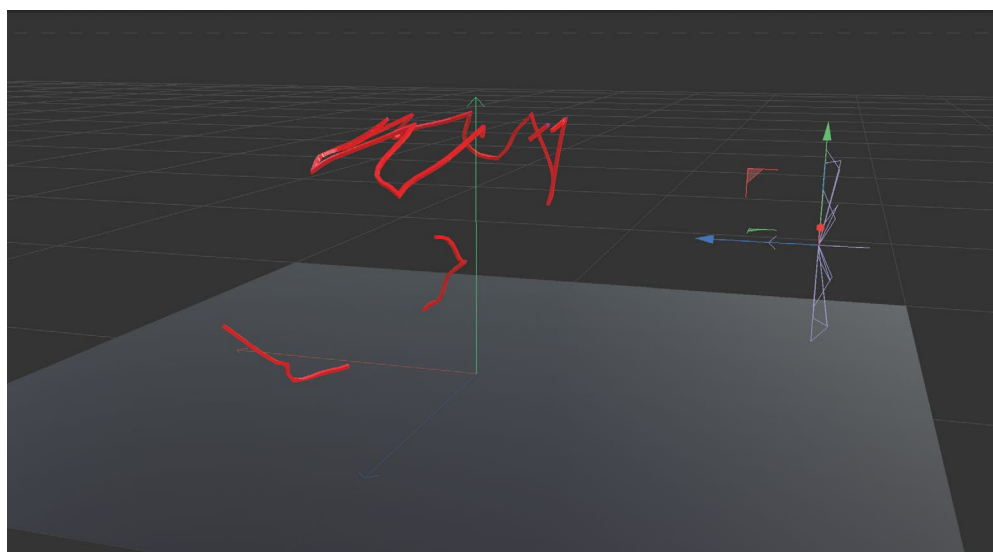
Splines objects can be given dynamic properties and have their own dedicated Tag in the Simulate menu, the 'Rope' Tag. This Tag can be applied to user-created splines or parametric spline objects such as the 'Flower' object shown. The Rope Tag does not have as many options as the Cloth Tag, but still allows a wide range of customisations. It works with Collider Objects the same way as regular Cloth Objects. As with all spline objects, being aware of the type of Intermediate points and how they are created does affect the look of the simulation.

17 DYNAMIC SPLINES – PART 02

Spline objects with the Rope Tag can have the points fixed in space like a polygonal object with the Cloth Tag. In the example shown, a Star parametric object has been converted to a Spline Object, and a Rope Tag has been applied to it. The inner ring of vertices on the spline has been selected, and then in the Rope Tag attributes, the 'Set' button has been pressed to set the selected vertices points in space. When the simulation is run, the outer ends of the star fall towards the ground.

18 DYNAMIC SPLINES – PART 03

Tearing and Forces also work with the Rope Tag as they do with the Cloth Tag. In the example here, the Star object from the previous example has been used to create a Sweep object with a square profile. The number of intermediate points has been increased to show more flex in the simulation as a wind object has also been applied. The 'TEARING' option in the Rope Tag has also been used with the 'Tear Past' amount set to a lower value of 115%, which will then allow some sections to detach when the simulation is run.



Artist Q&A

Practical tips and tutorials from
pro artists to improve
your CG skills



Glen Southern

Glen runs SouthernGFX, a small Cheshire-based studio specialising in character and creature design. He has been using and training ZBrush in the UK for over 15 years.
youtube.com/c/SouthernGFX/videos



Mike Griggs

Mike Griggs is a digital content creator with over two decades of experience creating VFX and CGI for a wide range of clients.
www.creativebloke.com



Antony Ward

Be it game development, rigging or recording in-depth courses for his YouTube channel, Antony boasts experience in most areas of 3D.
www.antcgi.com

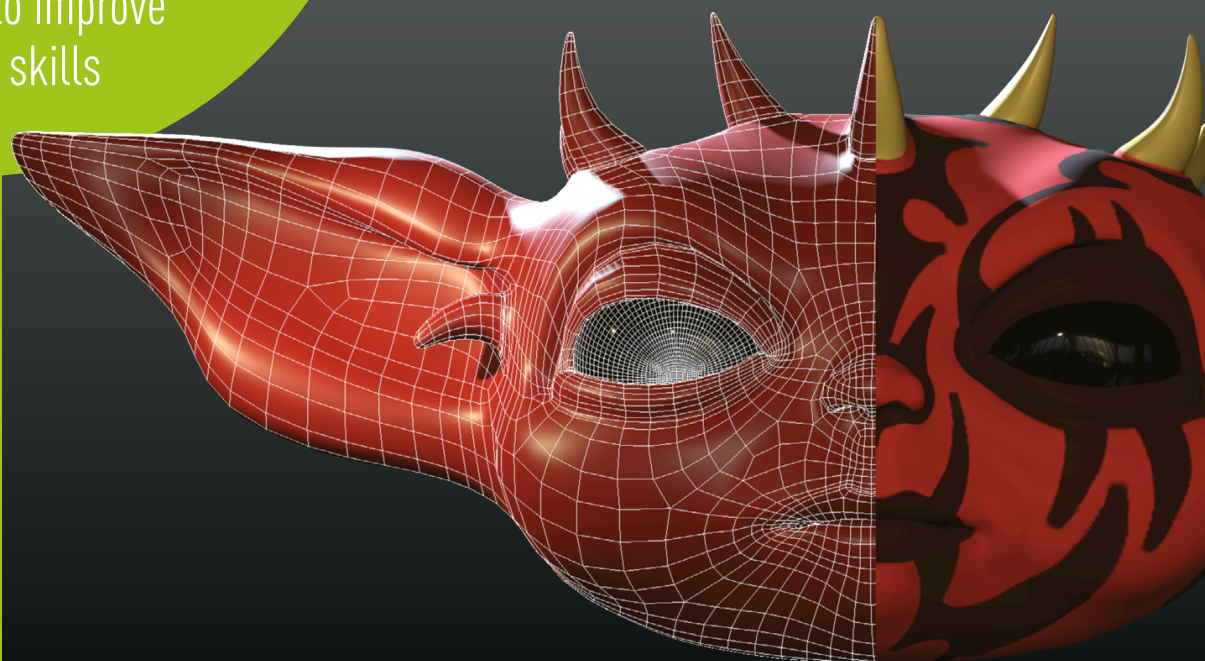


Pietro Chiovaro

Pietro is a freelance 3D artist and YouTuber. An expert in the creation of game assets and environments, he shares many of his creations on his channel.
www.pietrochiovaro.com

GET IN TOUCH

EMAIL YOUR QUESTIONS TO
rob.redman@futurenet.com



SOFTWARE: COZYBLANKET FOR IPAD

CAN I RETOPOLOGISE MY SCULPTS ON MY IPAD?

Daniel Torres, Manchester

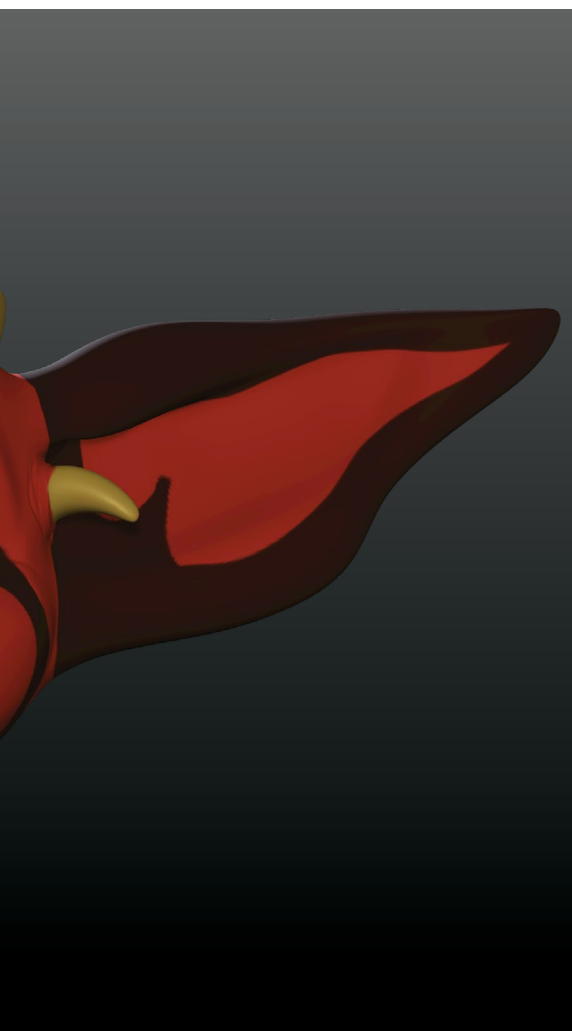


Glen Southern replies

In recent Q&As we have discussed how we can retopologise in programs like ZBrush and Blender, but we've never actually answered the question about whether it can be done on an iPad. Up until April of this year, we couldn't. Then CozyBlanket hit the App Store, and it is a fully featured retopology app that rivals the major desktop programs and add-ons. Just for the uninitiated, retopology is where you take a high-polycount sculpt (3D model) and you effectively re-make it with better, cleaner, more animation-friendly polygons and polygon flow. The new topology adheres to the surface of the high-polygon model while you are rebuilding it, which means you can grab all the high-res detail onto texture maps at a later stage.

CozyBlanket comes with a demo version and a paid full version with all the extra features and options you might need to use it professionally. Most 3D programs on the desktop have retopology of some type built in these days, and there are all sorts of third-party programs and add-ons including TopoGun, RetopoFlow for Blender, Cinema 4D has HB Tools plugins, Maya has the Quad Draw tool, etc.

There has never really been a need or demand for a retopology tool on the iPad until programs like Nomad Sculpt and Forger app by Maxon became available and began growing in popularity. There are even fully fledged 3D painting apps that allow you to paint on the new topology, and they include apps like ArmorPaint on the iPad.

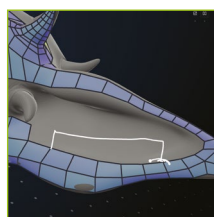


Getting creative on the iPad and fusing adorable little Grogu with the menacing Darth Maul

One good tip to remember is that CozyBlanket can't handle massive 3D files that the desktop programs can. You need to lower the polygon count of your models before you export them and send them across. You can do that in a number of ways, but the best is to use Decimation. In Nomad Sculpt you can run the Decimation feature and set the % for how much to decrease the mesh by. If the mesh is a million polygons and you reduce it to 10%, you will have a 100k mesh made up of triangles mostly. It should look exactly the same, just less dense in polygon terms.

Let's take a look at a Nomad Sculpt and see how CozyBlanket copes with it. As mentioned, I used the Decimation function before I sent this model across to the retopo app.

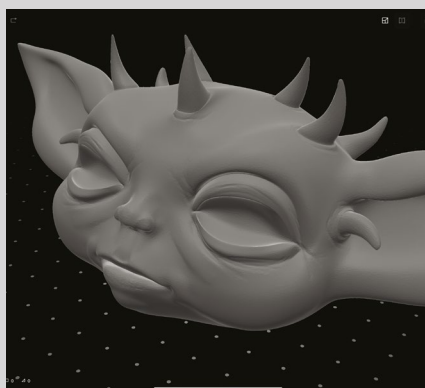
EXPERT TIP



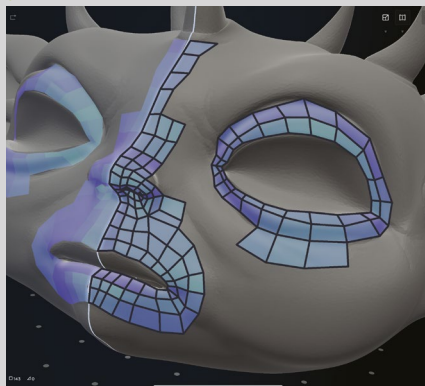
DRAW A LINE OF POLYGONS

If you have a long line of polygons that needs to be created, just draw out a box that covers the area you want to fill and CozyBlanket works it out for you. If you make a mistake, just undo from the menu or double tap on the screen.

STEP BY STEP RETOPOLOGY ON THE IPAD WITH COZYBLANKET



01



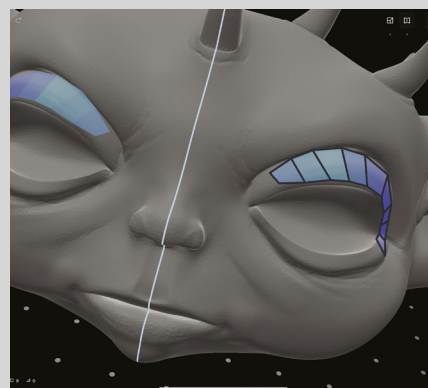
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01 IMPORT

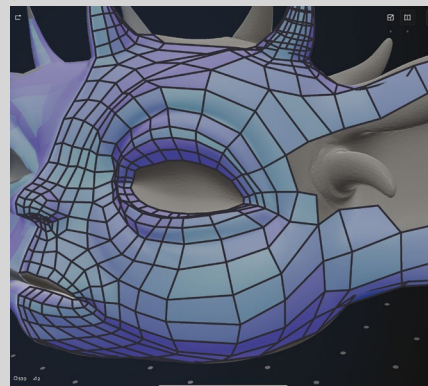
If you followed the steps in the article, you will have a fairly decent sculpt but it will have a lot less polygons than when you sculpted it. In CozyBlanket, use the Import function on the top right of the menu to import your mesh. I usually use an OBJ format. In the main window you will see a copy of your mesh, and it is ready to be retopologised.

02 SYMMETRY ACROSS X

Also top right there is a symmetry option so you can retopo symmetrical objects, which a lot of 3D models often are. This means you will only be working on one side and the app does the other for you. Look for the pencil icon on the bottom right and you can start drawing topology. For basic quads you simply draw out the next quad and it makes it for you. Start with the eyes and form your first loop.



02



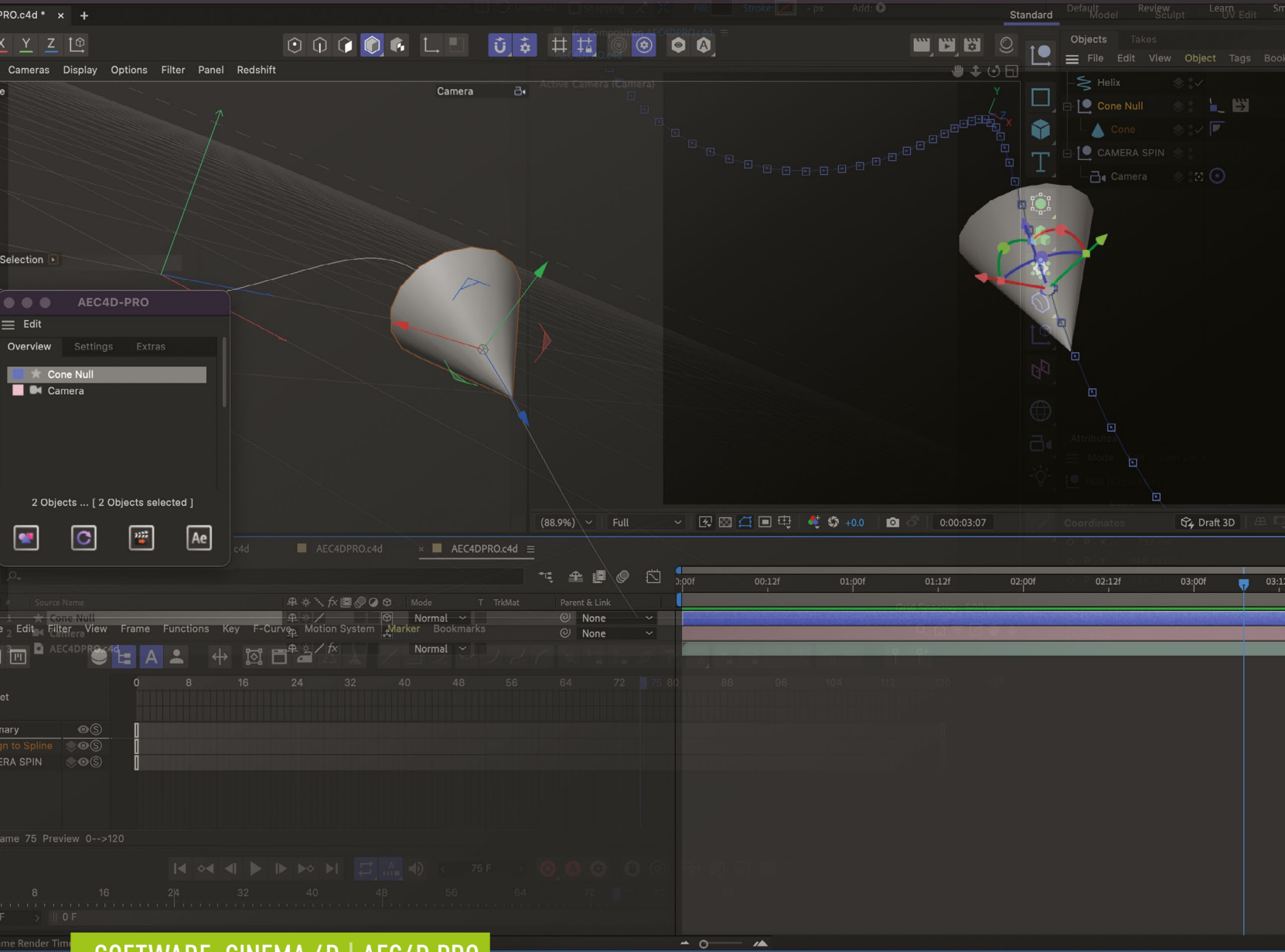
04

03 GO LOOPY

A good tip for any retopo situation is to make the loops around areas like the eyes, mouth, nostrils and the base of things like horns first. This means that you know the important areas will have good flow right from the start. Then you can just simply draw new quads to stitch them together.

04 FILL THE HEAD

There are lots of commands to use in CozyBlanket to delete, snap points together, make a triangle etc. They are all covered in a simple-to-use guide that is accessed from the top left of the menu. If you watch the training video you will learn them all in under five minutes. Use these tools to fill in the entire head. To smooth an area out use Relax from the right menu. This tightens and averages out your mesh on the surface.



SOFTWARE: CINEMA 4D | AEC4D PRO

WHAT'S THE QUICKEST WAY TO GET NULLS AND CAMERAS FROM CINEMA 4D INTO AFTER EFFECTS?

Charlie May, Bedfordshire



Mike Griggs replies

Maxon's Cinema 4D and Adobe's After Effects have a well-deserved reputation as a great creative partnership. Well-established first-party methods such as Cineware enable the transferring of 3D data like camera movements and positional nulls between the two applications. This allows artists to combine 3D tracking from Cinema 4D to easily create VFX and nulls, to enhance 3D rendered motion graphics from Cinema 4D with some of the wide range of After Effects plugins and text tools that can work within a 3D space.

While the standard transfer toolset is excellent, it can fall down when, for

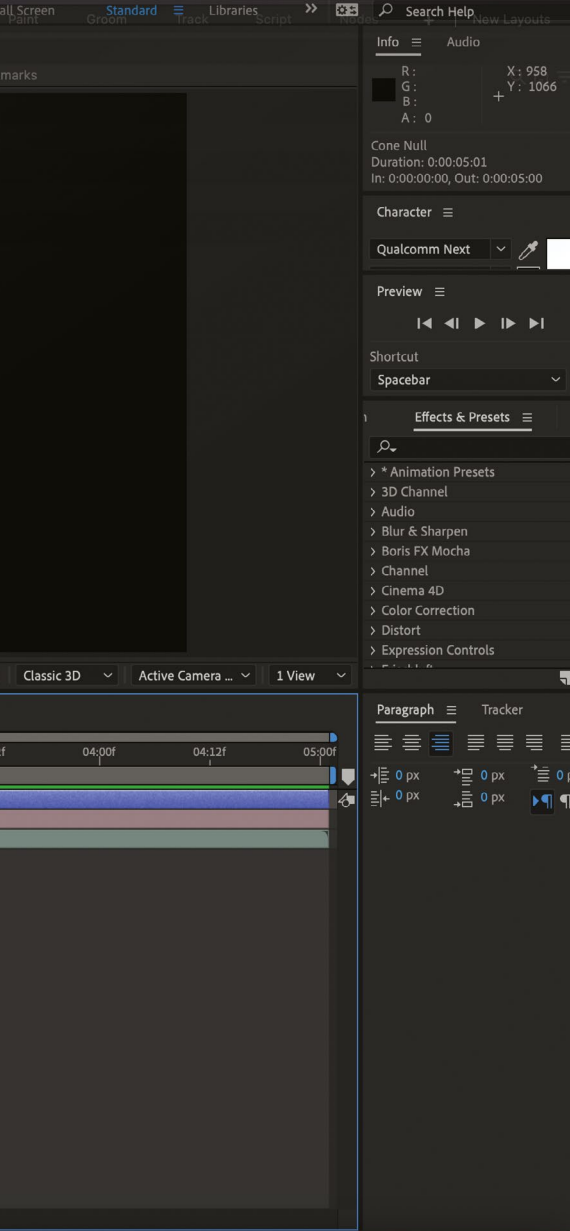
example, exporting a complex camera rig that is both moving in 3D space while the camera is tracking another object. Also nulls, when attached to an object, don't always reliably come through. While there are a range of options to 'bake' the animation data, either with first-party tools in the animation timeline or using third-party solutions, this means duplicate cameras and version control, which becomes tedious.

Thankfully though, a third-party plugin AEC4D PRO from developer Lasse Lauch, available at aescrpts.com, gets rid of virtually all of the hassle of complex animation transference from Cinema 4D

to After Effects with a couple of clicks, whether creating a new After Effects composition or adding 3D data to an existing composition.

The way that AEC4D PRO works is almost 'too easy'. In Cinema 4D, the AEC4D PRO menu is accessed through the extensions menu. The UI is intuitive, with a choice of objects listed that can be exported in the current scene. At the bottom of the menu are a set of controls that allow the artist to decide how to send the objects to After Effects and directly open After Effects itself.

The options available in these buttons make AEC4D PRO the preferred choice



AEC4D PRO is one of the best ways to get complex animations into After Effects from Cinema 4D

for artists who work with Cinema 4D and After Effects daily. The options available allow the creation of new After Effects compositions with all the available elements from Cinema 4D or just some that the artist chooses. Alternatively, Cinema 4D elements can be added to existing After Effects compositions. If an animation of a camera has been changed in Cinema 4D after it has been sent to After Effects, the animation data can be easily replaced.

While there are many ways to work with Cinema 4D and After Effects, AEC4D PRO takes it to another level. Let's take a quick look at how to work with this tool.

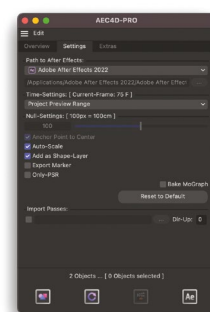
EXPERT TIP

GETTING THE MOST FROM AEC4D PRO

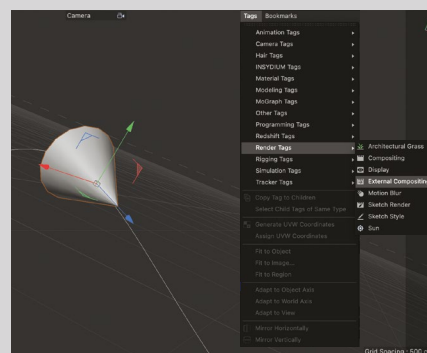
AEC4D PRO is very effective in its initial setup. Still, the settings palette reveals a range of options to refine and export, such as which version of After Effects to use, the length of the project to be sent and an option to Bake MoGraph.

Artist Q&A

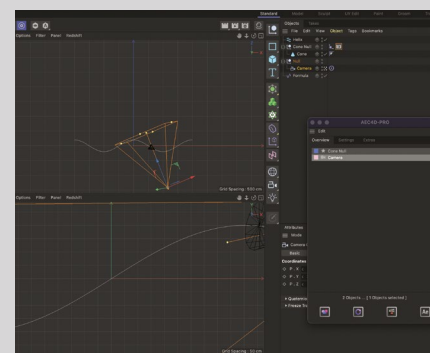
Your CG problems solved



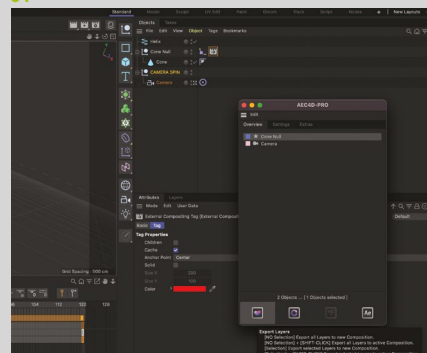
STEP BY STEP GET STARTED WITH THE AEC4D PRO PLUGIN



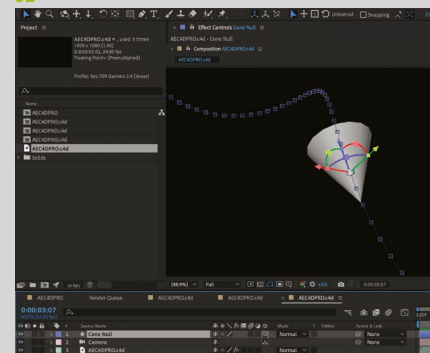
01



02



03



04

01 SET UP A SCENE FOR AEC4D PRO

It's quite simple to set up a Cinema 4D scene for AEC4D PRO. Just ensure whichever animated objects you wish to send to After Effects (other than cameras and lights that are tracked natively by AEC4D PRO) have an External Render Tag applied. This is done via the Object Manager menu>Tags>Render Tags>External Compositing.

02 ACCESS THE PLUGIN IN CINEMA 4D

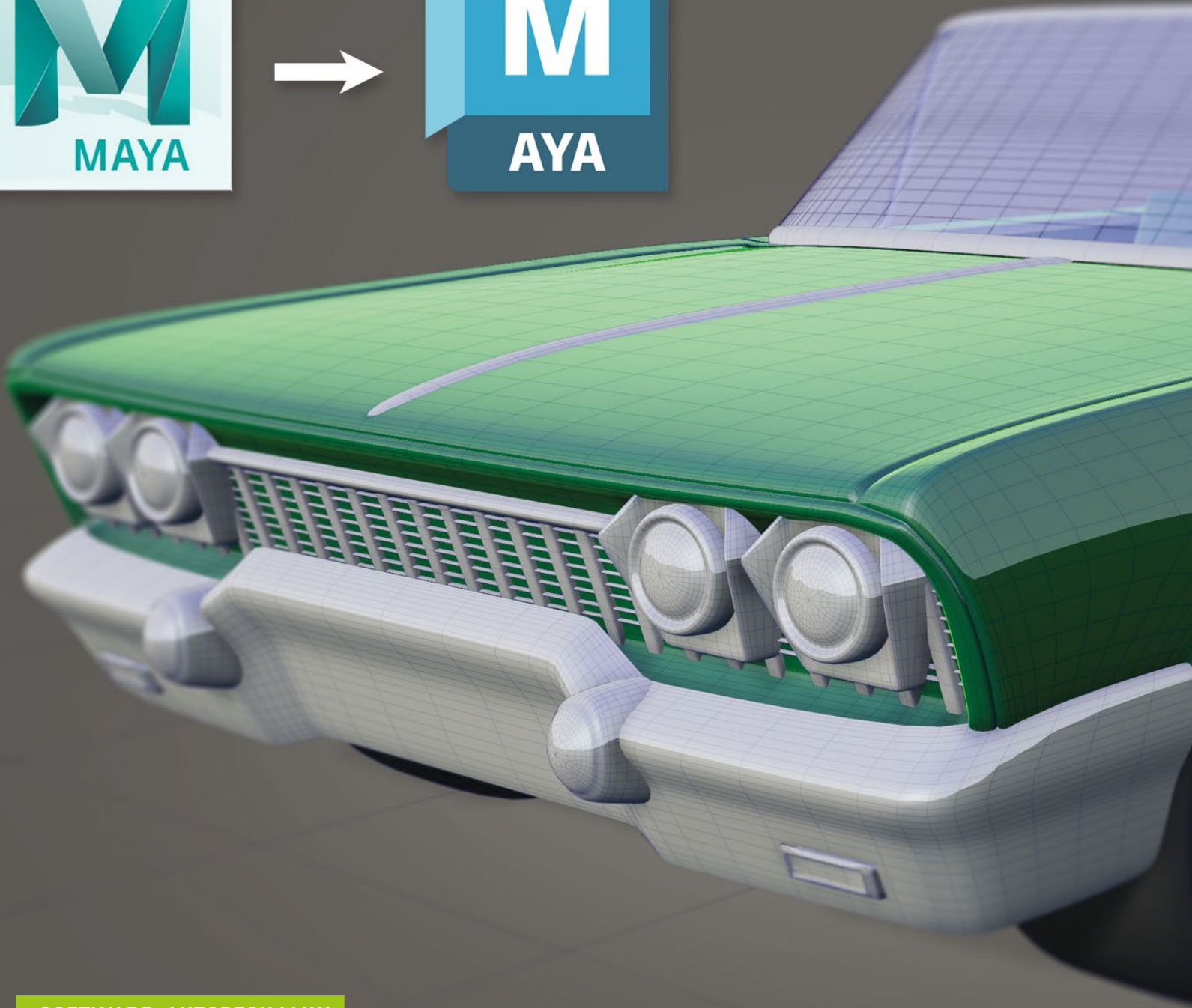
AEC4D PRO is available in the Extensions menu, and when it is accessed, a pop-up window appears showing the available objects that AEC4D PRO can send to After Effects. In this case, the Cone Null and the Camera. Learning to name objects – for example, changing the standard 'Null object' name to Cone Null – is always good practice and especially important when using AEC4D PRO.

03 SEND THE COMPOSITION TO AFTER EFFECTS

To send the scene to After Effects using AEC4D PRO, use the 'Ae' icon on the bottom right of the AEC4D PRO interface to open After Effects if it is not already open, and then hover the mouse pointer over the bottom-left icon to see the options. In this case, we are creating a new composition with the objects selected in the list, requiring a single click of the icon.

04 USE THE AEC4D PRO COMP IN AFTER EFFECTS

The new composition in After Effects has the Cone Null and camera ready to go, with the animation of the cone and camera fully captured as a motion path. This allows elements such as text or third-party particle systems to be easily attached to the nulls. Dropping the original Cinema scene in via Cineware is a quick way to carry on working with the C4D file directly within After Effects.



SOFTWARE: AUTODESK MAYA

SHOULD I UPGRADE TO MAYA 2023?

Emily Reece, Essex



Antony Ward replies

Another year has flown by and before we know it, it's Autodesk update season again. A time where we artists, animators and sculptors can look forward to some seriously good upgrades to our tools. Updates which, in theory, should have us lunging for the download button with hopes of new toys to play with, as well as highly optimised software that will make our lives easier.

And so, Maya's 2023 release is finally here, and our hopes are high, so we

should be excited, right? Well, there is a lot to look forward to in this release, especially if moulding polygons into characters or creatures is your area of expertise. With that said, the first change that leaps out at you is Maya's new logo. It's much cleaner than the previous iterations, but its design also has the internet divided as to whether it's an improvement or not.

Besides the rebranding, what else is new? What's the big feature this year?

Having used it for a while there are a few things that stand out, but I wouldn't say there is one huge addition in 2023. With this release it seems to be the case that Autodesk have spent time updating and refining existing tools rather than creating new ones.

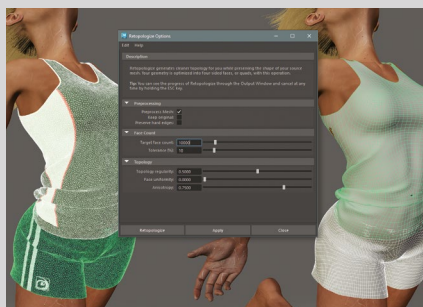
For example, performance improvements have been a big focus, with the modelling and retopology tools being reworked to speed up interaction and calculation time.

EXPERT TIP

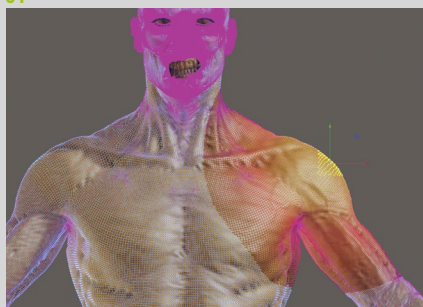
OTHER UPDATES WORTH A MENTION

Maya 2023 also features some smaller, but much-needed updates, like being able to adjust your wireframe opacity, hide Unit Conversion Nodes in the Node Editor, and quickly search for tools and commands with the new Search function. Being able to pin the attribute editor is also a welcome update.

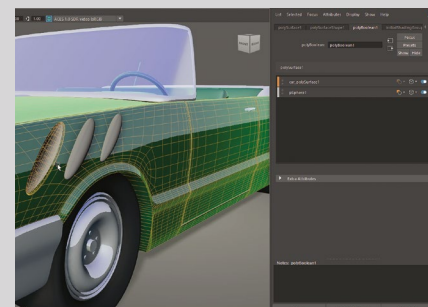
STEP BY STEP MAYA 2023: A QUICK LOOK



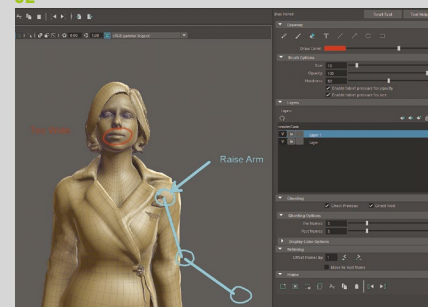
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04

01 REFORM

The retopology tools in Maya 2023 have been updated with a reworked system Autodesk are calling Reform. This has been created in collaboration with the 3D Studio Max team, plus another internal team, to create a new algorithm which dramatically speeds up retopology of high-density models.

A new Preprocess Mesh option will optimise the model prior to the retopology being changed, which helps to speed up the process.

02 STACK-BASED BOOLEAN

The Boolean tools have been completely overhauled in Maya's latest release, making them quicker and more intuitive. You are now given a new UI which allows you to interactively change how the Boolean operation should be performed on the chosen models.

It's so flexible that you can even reorder the models in the stack and reposition them in the viewport, with everything then being updated automatically for you.

03 MODELLING PERFORMANCE

One of my personal favourites is the improvements to modelling, in particular the speed increase which Autodesk claim is 30 times faster than in last year's release.

After various tests I can confirm there have been significant improvements to component interactions, especially when working with high-density meshes. Something as simple as a change in the selected vertices now happens almost instantly, whereas in Maya 2022 there was a significant delay.

04 BLUE PENCIL

This new viewport annotation tool replaces the Grease Pencil and brings with it some great enhancements, meaning animation directors can more closely guide and evaluate the animators on their teams, simply by offering feedback over the top of their work.

You now have layers to work with, different colours and a transform tool so you can move and rotate areas, plus you will also get pressure sensitivity if working with a graphics tablet.

Maya 2023 is upon us, but is there enough to warrant an upgrade?

The big question is whether you should upgrade or not. Well, those of us who are on an annual subscription will get access to the update automatically, and with the modelling improvements alone it's worth taking the time to transition over.

But what if you are using last year's release, or you're in a position where you need to pay to upgrade, which as we know isn't cheap? Well, before you make up your mind, let's look at a few of the key updates in this year's release.



WATCH
THE VIDEO

https://bit.ly/3D-world_288



A good alternative to Wood Fiber 2 is Wood Fiber 1: it changes the grain and texture of the fibres of the parquet, useful if you are looking for a different type of wood

SOFTWARE: SUBSTANCE DESIGNER

HOW CAN I CREATE A PARQUET MATERIAL USING SUBSTANCE DESIGNER?

Lara Church, Liverpool



Pietro Chiovaro replies

I will break down my process for creating a simple parquet material using Substance Designer; you can see the complex version of this material in the provided video.

For this type of material, I selected the Physically Based (Metallic/Roughness) Graph Template and deleted the Metallic output since it isn't necessary here.

Next we can start to add the nodes useful for this material, so from the Substance Designer library we need: the Wood Fiber 2 noise, the Brick Generator pattern (these are the base elements of the parquet material), a Blend filter, the Height to Normal World Units filter (or the Normal filter, since this has the same function), two Levels filters, a Blur filter, a Warp filter and two Gradient Map filters that will give colour to the floor.

Now it's time to link all of these elements together. First of all, we need to link the Brick Generator to the first Levels filter, and consequently this filter to the Gradient Map.

Now we have to connect this first gradient to the Background input of the

EXPERT TIP

BRICK GENERATOR

The Brick Generator pattern is one of the generators I use the most. Thanks to the different parameters provided it can be used to create a variety of geometries and surfaces, like tiles, bricks, parquet, wooden bars, cobblestone etc... you just need to make sure to link the right nodes and set the correct values.

Blend filter, and this will be linked to the Base Color output of the material.

Now we have to do a new link between the previous Levels filter and the second Levels filter, and this one can be linked to the Height output of the material. This way we can control the depth of the parquet.

After that, we have to link the first Levels filter to the input of the Warp filter. This filter can then be linked to the Height to Normal World Units (or Normal filter), and consequently we can link it to the Normal output.

Next, link the Wood Fiber 2 filter to the Blur filter, which can be linked to the Gradient input of the Warp filter. The same Wood Fiber 2 filter must be linked to the

second Gradient Map, which is connected to the Foreground input of the Blend filter. In order to define this part of the material, we have to link the first Levels filter to the Opacity input of this filter.

Last but not least, we can simply link the Blend filter to the Roughness output, in this way we can give more details to the reflections of the parquet material.

For this material, there are not many restrictions when it comes to the parameters to use, but for the Brick Generator I suggest these values for the brick size: X:3 and Y:12. Regarding the Gradient Map (that will define the base colour texture of the parquet), I created a shade of brown.



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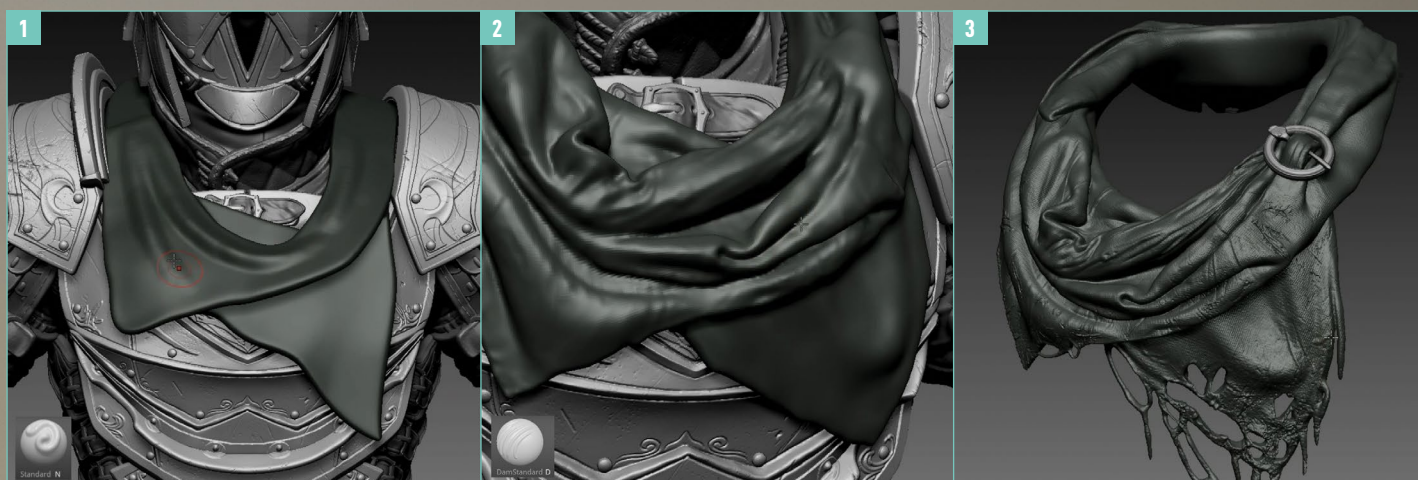
● **Technique focus**
Freehand cloth modelling in ZBrush

STEEL ARMOUR

Software ZBrush, Substance Painter,
Maya, Marmoset Toolbag 4

Year made 2022





Technique focus

Incredible 3D artists take us behind their artwork

FREEHAND CLOTH MODELLING IN ZBRUSH

Image 1: To create the cloth scarf I started with planes and used the Standard brush to begin sculpting drop folds, keeping in mind the main tension points. At this stage I'm mainly looking to break up the surface and not committing to any one fold yet.

Image 2: Later in the process I introduce reference; you can find plenty online or create some yourself by taking photos of pillow cases with the desired look. We're looking to create dynamic y-folds and realistic crumpling at this stage, so take your time and make sure you are sticking to your reference.

Image 3: Details, details, details. Cloth is a great storytelling device: tattered worn cloth speaks of countless adventures, and even the smallest tear can do wonders for your character's overall storytelling!



Harry Osborn
[instagram.com/harryosbornart](https://www.instagram.com/harryosbornart)

My name is Harry, I live in Australia, and work in the games industry as a 3D character artist!

The Hub

News and views from around the international CG community



PROJECT INSIGHT

Arctic expedition

The team behind the Netflix feature *Against The Ice* take us behind the scenes

Back in 1909, a Danish expedition set out on a dangerous journey across Greenland to counter US territorial claims and prove that the country was in fact one continuous island landmass.

In a great test of survival and friendship, Captain Ejnar Mikkelsen and one inexperienced crew member battled starvation, fatigue and polar bear attacks only to return and find the ship they arrived on destroyed and their camp abandoned.

Netflix has adapted Mikkelsen's novel of these actual events into a new feature film, *Against The Ice*, directed by Peter Flinth (*Wallander*, *Beatles*). It is co-written, co-produced and stars Emmy-nominated

Nikolaj Coster-Waldau (*Game Of Thrones*) and produced by Baltasar Kormákur (*Everest*, *Adrift*). BAFTA-nominated Joe Cole (*Peaky Blinders*) and Emmy-winning Charles Dance (*The King's Man*) co-star.

The drama was shot on location in Iceland and Greenland by Torben Forsberg, DFF. The cinematographer is no stranger to Arctic extremes, having lensed the documentary *The Expedition to the End of the World*.

Picture post was delivered by Reykjavík, Iceland-based boutique Trickshot using DaVinci Resolve Studio for the grade, online and finish.

Flinth wanted the viewer to experience the cold and chilling Arctic conditions of the explorer's journey, explains Trickshot's

senior colourist Eggert Baldvinsson. The director also wanted the grade to bring out the warmth and colour of the costumes.

At the same time, Baldvinsson's instruction from Forsberg was to keep as much detail in the snow as possible. He explains, "Since many of the scenes are almost entirely white, the most challenging part was to retain the snow details and create enough contrast to feel some texture."

"In doing this, I had to take care not to over-crank the contrast on the main characters and their costumes. The most challenging shots are in cloudy skies and bad weather, since it was easy to lose texture in the snow if we weren't careful."

A baseline blue colour features across the piece, with the colourist charged with >

Left: The explorers battle for survival against Greenland's harsh environment and ferocious wildlife

Below: The historical survival film is based on the true story of Danish explorer Ejnar Mikkelsen (played by Nikolaj Coster-Waldau)

Bottom: Retaining detail and texture on the clear-white snow was a challenge, especially in cloudy skies and less-than-ideal weather



➤ ensuring the tone remains consistent throughout the film.

SHOOTING FOR HDR

Baldvinsson boarded the project at an early stage to set up a demonstration for the filmmakers of what to expect from the HDR finish. Forsberg made lens, costume and filter tests shooting on Alexa Mini LF in RAW as the basis for look creation.

“We built a show LUT for both HDR and SDR,” Baldvinsson says. “The SDR version was used in camera and for monitoring during principal photography, and then applied to the dailies and Avid offline.”

“Our starting point was the ST2084 (HDR) 1,000nits version of the film,” explains Baldvinsson, who also onlined and finished *Against The Ice*. “As this was their first HDR project, I wanted to make the experience as seamless as possible.

“WE APPLIED A SOFT FILTER AND SLIGHT CAMERA SHAKE TO HELP AUTHENTICITY”

Eggert Baldvinsson, senior colourist

“Ahead of filming, my advice was simple. Don’t get too caught up on it being HDR. Meticulous prep in pre-production to establish the show LUTs and a thorough DI left us in good shape to deliver a high-quality HDR finish for Netflix.”

Baldvinsson advised that the highlights should be kept from burning out. “We could then decide how much of the dynamic range we would use during the HDR grade,” he says. Forsberg and Flinth worked closely on set with the DIT and adjusted the ShowLUT-SDR files for the Avid offline to fit their creative thinking on set.

An SDR trim pass was completed using DaVinci Resolve’s DolbyVision tools. “We would often refer to the SDR offline during the grade to check what had been done on location,” he says.

“Peter was with me most of the time during the grading process, and we made sure we addressed any concern we had for certain scenes. We also watched the film in HDR in the last run, and we reached the end without any further notes. Peter and I later viewed a theatre screening of the film to sign off on the SDR DCP version. In fact, we watched it in two different commercial



theatres for comparison.” For extra quality control and to leave no stone unturned, Flinth, Forsberg and Baldvinsson all reviewed the final HDR version on Netflix’s review platform.

INCORPORATING VFX

Similar attention to detail was made for VFX shots of weather, polar bears and landscapes, many of which were pretty complex. Before the primary grade began, Baldvinsson worked with VFX supervisor Guðjón Jónsson to apply a grade to all FX shots for preliminary approval.

“I created the look for those scenes by applying and manipulating the VFX shots to look their absolute best, and tweaked as needed to eliminate the need for VFX round

tripping,” Baldvinsson says. “The software’s 3D keyer was crucial for manipulating elements, as was the use of matte/alpha video layers when working with heavy visual effects shots. Likewise, the ability to overlay shoots in the timeline was a big asset. We even applied a soft filter and slight camera shake to help create authenticity within the story.”

All the VFX pulls for delivery to FX vendors, principally Union FX and MPC, were managed in DaVinci Resolve, as were titles and graphics. Completing the DolbyVision analysis and SDR Trim pass, Trickshot then managed the IMF exports and final DCP creation.



Against The Ice is available to stream now on Netflix.

Left: The drama was beautifully shot on location in Iceland and Greenland, capturing the truly perilous journey of the real-life crew on their 1909 expedition

Below, left: *Against The Ice* was finished in 4K HDR, which required meticulous prep in pre-production and a thorough DI

Below: A blue colour scheme sets a consistent tone for the movie, and serves to immerse viewers in the chilling Arctic conditions





Recreating a Swedish literary legacy with Blackmagic Design

From blockbusters to independent animation films, editor turned director Tomas Alfredson used a global pandemic to pursue an ambitious passion project

Best known for directing the Oscar-nominated *Tinker Tailor Soldier Spy*, Alfredson sought a new challenge with *Bara knyt, Alfons!* by almost single-handedly producing an adaptation of the famous Swedish children's book character Alfons Åberg (Alfie Atkins).

Created by the late author Gunilla Bergström in the 1970s and adored by fans, the fictional character has since become symbolic in Scandinavian children's literature. "I am too old to have read these stories as a child, but I have three children who've all grown up with these stories.

"You quickly notice that the kids really engage with the story and characters. I have often asked myself, what makes them a classic? Why do children lean in, wanting to know what happens in the next beat?"

And with the onset of COVID, Alfredson took the opportunity to explore those questions further. To help, he put together a small team of collaborators, utilising their skills and knowledge to implement a production workflow capable of realising his creative vision.

Having started his career as an editor, Alfredson has always preferred simplicity in

his production workflow and was intrigued by the idea of using one codec for both acquisition and post.

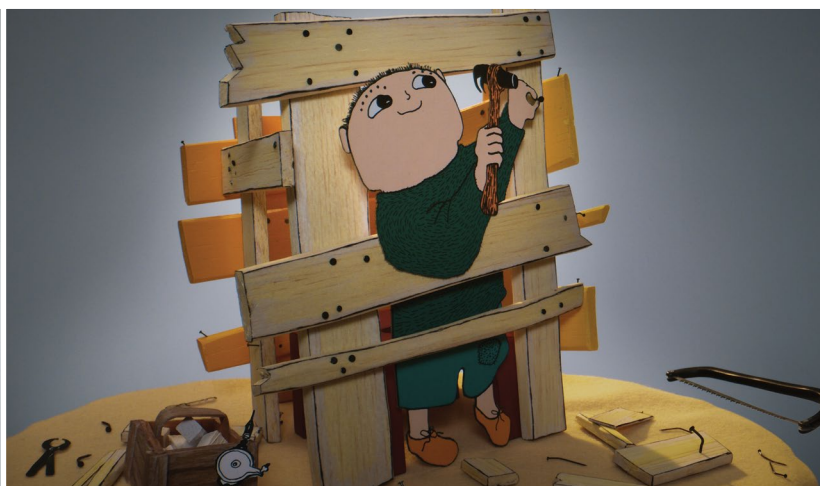
Maintaining a long-standing relationship with Bergström before her passing, much of the features' final look draws on the creative intent of the illustrations in Bergström's books. Although a previous film adaptation of the book was released in 2013, Alfredson's vision focused on stripping back the cinematography.

"The project's production workflow was designed around Blackmagic RAW. We rigged a single Pocket Cinema Camera 6K so that we could mount a long lens and used an Edelkrone slider to control the camera's movement. The rushes were then offloaded from the SSD into DaVinci Resolve."

Put together in three half-hour mini features for a theatrical release, Alfredson broke the film into ten 12-minute episodes, which allowed for a more streamlined cutting process. The ultimate goal was to keep the production and post-production process as simple as possible.

While Alfredson directed and edited the feature, he turned to Simon Rudholm (DP), Casper Ehrenborg (VFX), and colourist Mats Holmgren of Edisen. The ease of the





DaVinci Resolve workflow allowed them to collaborate seamlessly, helping to keep project management fluid. “Once we had an initial cut locked off, Edisen would begin work on the grade. I was then able to fine-tune the edit during the review process while the grade was in progress.”

When it came to compositing the visual effects, Alfredson brought in Casper Ehrenborg. Having never used Fusion Studio previously, Ehrenborg was testing new waters with *Bara knyt, Alfons!*

Provided with a brief and his own love for the books as a child, Ehrenborg set out to finish the feature’s VFX. This included retouching, compositing and 2D animations. “The approach worked well,” comments Ehrenborg, who delivered a number of VFX shots.

“The workflow and structure made it quick and easy for me to add a VFX shot while Tomas was editing. That ability to collaborate on the same project simultaneously saved a considerable amount of time. For example, a scene didn’t have to be complete for me to begin working on the VFX,” he continues.

Alfredson sought to provide Holmgren with as much creative inspiration as possible when it came to the grade. By providing high-quality scans of the original illustrations, Alfredson could direct him with accurate colour swatches for the grade.

With that said, the grade did not come without its challenges. As the original books included basic illustrations with a lot of white space, Holmgren needed to ensure the feature was visually engaging enough for children while maintaining the original books’ aesthetic.

“One of our biggest problems was the white background included in the original illustrations. We decided to avoid this by creating a colour we call ‘Alfie white’,

which was a mixture of about 30-40% grey but ensured there was still subtlety in the background,” explains Alfredson. “Ultimately, we had to modify things here and there, but we have been very true to the original material.”

Holmgren was responsible for the entire grade of the feature. Mastered as a 4K DCP in SDR, the decision to acquire in 6K means that there is scope to remaster for HDR in the future.

A particular highlight of working on the production for Holmgren was the imaginative cinematography. “We used flashlights to create the effect of day and night and whimsical transitions between scenes,” he explains. “What I found most

“ULTIMATELY, WE HAD TO MODIFY THINGS HERE AND THERE, BUT WE HAVE BEEN VERY TRUE TO THE ORIGINAL MATERIAL”

Tomas Alfredson, director, *Bara knyt, Alfons!*



unique and special about the production was the use of vibrant textures, depth and light. The materials used in the scenes were real; you could physically touch them.”

“I’ve worked across multiple genres, including comedy, thriller and horror, yet the most interesting aspect, and challenge, I’ve faced is the storytelling,” reflects Alfredson. “Alfons Åberg is a unique challenge because you’re required to ignite the imagination of toddlers largely through visual storytelling, and that’s a craft.

“Having embraced a Blackmagic workflow, the images have never left the chain from shoot to edit to grade, and it has all worked beyond my expectations.”

FYI *Bara knyt, Alfons!* is in cinemas across Scandinavia now.

PROJECT INSIGHT

Unreal CGI bears

We discover how Eevolver Production Studio implemented a real-time fur pipeline for a Ralph Lauren commercial using Unreal Engine

Ralph Lauren's iconic Polo Bears take centre stage in the fashion company's festive fragrance campaign. Starring three distinct hero bears and an adorable supporting bear cast, the nearly one-minute-long CG spot features a visual journey originating from Ralph Lauren's flagship store in New York City, taking viewers through Central Park, along the streets of London, past the Eiffel Tower, and to downtown Shanghai, before returning to New York City.

Snow swirls and lights twinkle as a magical world unfolds to a punchy soundtrack. For the high-profile holiday project, production powerhouse Industrial Color enlisted Eevolver Studios as a creative partner, tapping the outfit's expertise in animation and VFX to deliver a tale that was both whimsical and cinematic in highlighting Ralph Lauren fragrances.

In determining the look of the spot's main characters, the Eevolver team aimed to modernise and elevate the brand's familiar teddy bear aesthetic, while

maintaining its original warmth and appeal. To translate the designed look from concept art into animation, Eevolver leveraged the real-time fur capabilities of Epic Games' Unreal Engine, an approach that allowed artists to quickly create and render high-quality fur on multiple characters in one scene simultaneously. Initial story beats and blocking were laid out as previs, then assets were finalised and incorporated into the timeline as creatives refined the spot details. Combining motion capture and keyframe animation, artists further





MEERKAT INSPIRATION

The 'Meerkat' short film released in December 2020 highlighted how realistic fur and feathers can be created in Unreal Engine. Upon seeing the project, the team at Eevolver Studios recognised the potential of adding real-time tools to its own workflow, first using Unreal in production to create the full-CG Ralph Lauren holiday fragrance spot starring a trio of Polo Bears.



articulated the movements of the bears, ultimately delivering the hybrid look that fit within the action-oriented narrative and that also aligned with traditional Ralph Lauren branding.

By building scenes in Unreal Engine, the team could see each location from all angles, akin to live action on set. Eevolver director Gregor Punchatz was able to move the virtual camera to any spot within the scene, allowing the team to visualise and edit the entire spot in real time. Unlike traditional rendering workflows that are typically time-consuming and costly, deploying a real-time workflow enabled the team to quickly experiment and iterate, providing more freedom in their storytelling process.

"There's no better or easier place for doing environments than in Unreal," said Punchatz, who indicated that the project's multiple environments as well as overall scope was what motivated the studio's workflow choices. "Being able to do all these CG shots in real time, without traditional rendering, is a completely different way of

"THE UNREAL SEQUENCER IS THE ULTIMATE STORYTELLING TOOL... A COMPLETE GAME-CHANGER"

Gregor Punchatz, director, Eevolver

working. It's an exciting future with Unreal, that's for sure."

The Eevolver team was inspired to use Unreal Engine for the Polo Bears after viewing the 'Meerkat' short film rendered entirely in Unreal Engine. The short showcased the tool's capabilities for creating realistic fur, indicating tremendous potential for helping teams create high-quality CG content quickly. Even with numerous bears to animate and render, the team was able to remain agile using Unreal Engine. Punchatz explained, "To me, the Unreal Sequencer is the ultimate storytelling tool. I can play through these

3D worlds in real time and see what it looks like, and you can make changes all the way through. Animations remain live on the timeline so updates can happen relatively easy. That's a complete game-changer."

Accelerating its workflow with Unreal Engine, Eevolver was able to deliver the spot end-to-end in five months ensuring the campaign would be ready ahead of the busy shopping season. Based on the success of the project, Eevolver has since deployed a similar workflow for an upcoming project featuring CG fur-and-feathered dinosaurs, and anticipates real-time tools remaining a vital component of its production process.

Reviews

We explore the latest software and hardware tools to see if they are worth your time or money



AUTHOR PROFILE

Paul Hatton

After graduating with a first-class computer science degree, Paul Hatton has spent nearly two decades working within the 3D visualisation industry.

+ PROS

Unbelievable realism

Open worlds creation is faster

LOD models are handled effortlessly

- CONS

Royalties are charged for successful projects

The platform can be difficult to use

Learning curve is steep compared to other options

META HUMANS

Over 1 million humans have been created using Unreal's MetaHumans app. These can be used for games as well as in any virtual application.

Character Rendering Test

UE5 Early Access on Xbox Series X

Triangles: Body 160k, Face 31k, Groom 3.5m



"GONE ARE THE DAYS OF CREATING SEPARATE MODELS FOR DIFFERENT LEVELS OF DETAIL"

The Cavern © The Coalition / Xbox Game Studios

Echoes of the End © Myrkur Games / Prime Matter

SOFTWARE REVIEW

Unreal Engine 5



PRICE Standard licence – Free (5% royalty if your project earns over \$1 million) | **COMPANY** Epic Games | **WEBSITE** www.unrealengine.com

Left and below: The Coalition's *The Cavern* demo features superb facial detail

Bottom: *Echoes of the End* is a new game from Iceland that features performance capture

The world has waited eight years for this: Unreal Engine 5 (UE5). It represents a mammoth leap forward in technology for the games industry and completely redefines the playing field for the future of gaming, augmented reality and whatever the future holds for the digital parallel of the physical world. This release has come at a key time and will no doubt provide much of the tech required for moving many companies toward realising their ambitions for the world at large.

We had a sneak peek of UE5 back in 2020 when Epic Games released a demo of what was possible with the engine. This demo, based on a tomb raider-like character, wowed the world, as realism which was previously unachievable became eminently possible. In true dramatic style, two years on, we've now been privileged to see another demo, this time from Xbox Games developer the Coalition. *The Cavern* runs on Xbox Series X and is impressive from start to finish. The main character looks absolutely amazing, especially the hair and beard which alone includes 3.5 million triangles. The scene itself includes 100 million triangles, with everything, including lighting and reflections, rendered in real-time. This demo gives us a good look into what is possible with UE5.

The success of UE5 seems inevitable, with Sony and Kirkbi, parent company of the Lego Group, investing \$1 billion each. Enough of the hype though. Why is everyone so excited about UE5? Let's take a look at the new developments.

LUMEN

This is UE5's global illumination and reflections system. It has been built for next-gen consoles and is fully dynamic in its implementation. It enables artists to achieve realistic lighting and reflections no matter the scene or time of day, or however complex the lighting setup needed. Its dynamic nature is its strength, meaning everything is dynamically adjusted to light sources in the scene. Much of what is possible in Lumen is possible within modern day renderers but the fact that UE5 does it all in real-time makes it even more remarkable.

NANITE

Gone are the days of creating separate models for different levels of detail (LOD). With Nanite, UE5's virtualized geometry system, artists only need to import their high resolution model and leave the engine to do the rest. UE5 will analyse the mesh and break it down into "hierarchical clusters of triangle groups". This means that during the real-time rendering of those objects UE5 will determine which LOD to display at any given time. With only what is needed residing in memory you'll find your games displaying at much improved frame rates.

With this technology, artists can now import and utilise high definition sculpts and

scans for their characters. The man in *The Cavern* demonstrates what is possible with impressive levels of detail.

META SOUNDS

This is UE5's new audio system. It lets you control every sound that your end users will experience. Through major workflow improvements and further customisation, audio designers can create powerful audio systems with the utmost accuracy and control. Programmers will feel right at home with Meta Sounds and many will now be able to set aside middleware engines like Wwise and FMOD. There are, of course, still some limitations to this audio system, especially when it comes to handling complex audio setups and dialogue heavy games.

CONCLUSION

The capabilities of UE5 are yet to be fully felt by the industry. Many of the high profile games using UE5 are still in development and it'll take years for us to truly experience what's really possible.

With UE5 being completely free to download and create, it's a bit of a no-brainer to give it a whirl. After all, you'll only start paying royalties when your project earns over \$1 million but by that point you won't mind paying it because of the incredible success that you've achieved.

THE VERDICT

8.0
OUT OF 10

UNREAL ENGINE 5

UE5 is a game changer. More than the individual features that have been introduced and the technology that underpins them there is a sense that many of the future technological developments will be built upon this foundation.



AUTHOR PROFILE

Paul Hatton

After graduating with a first-class computer science degree, Paul Hatton has spent nearly two decades working within the 3D visualisation industry.

+ PROS

A completely reworked rendering engine

Major performance improvements

More procedural support

- CONS

Learning curve can be steep

User interface could be improved

GREASE PENCIL

The 2D animation tool, Grease Pencil, has been vastly improved. Not only has its performance been sped up but it also comes with a new set of modifiers. One example includes the 'Dot Dash' modifier which allows animators to use dot-dash lines on strokes automatically. Artists can now more easily set up outlines using a negative value in the fill tool.



© Blender

SOFTWARE REVIEW

Blender 3.0 and 3.1

PRICE Free | COMPANY Blender | WEBSITE www.blender.org/

At the back end of 2021 Blender released version 3.0 of their much-loved content creation tool. It only took three months for them to release a further update, this time focusing primarily on performance and speed.

With nearly three decades of development under its belt, Blender really is a force to be reckoned with. This major release included a plethora of new features and was well received by the community. Let's dive in to see what was noteworthy in the major release and then we'll see what's changed in 3.1.

ANIMATION

First up, big improvements have been made to the animation tools. The introduction of the pose library now allows animators to store and apply various character poses with absolute ease. By providing an interface that not only enables the adding of poses to characters but also gives tools to blend between poses, animators are able to set their poses up in a fraction of the time. As Blender has evolved, the process of animation is becoming increasingly natural for artists. The tools themselves have taken a back

seat and the creative process has taken the fore. Compared to previous posing workflows, animators will find this an absolute game changer.

RENDERING

In April 2021, Blender announced that it was going to carry out a major overhaul of Cycles, its primary render engine. In the time between the announcement and the release of Blender 3.0 (only eight months) Blender developers have managed to make rendering times up to eight times faster. That's quite the improvement in such a short space of time! Now

Left: *Sacred Deer* made for the Blender 3.1 splash screen by Lorenzo Aiello (orencloud). Download the .blend file here: bit.ly/3Nsn32y

“BLENDER’S PROCEDURAL SYSTEM HAS BEEN BOOSTED. WITH 19 NEW NODES”

object or bone and paste it onto another object or bone. This addition will enable animators to more quickly set up their animations.

Blender’s procedural system has also been bolstered with a whopping 19 new nodes. Every one of them is noteworthy but particular attention should be given to the new Extrude node. This will completely transform the modelling process for many artists. Procedural modelling like this enables artists to make models that are procedurally driven and therefore non-destructive. Changes can therefore be made at any time without fear of not being able to return to a previous iteration.

With support in Cycles for Metal GPU, a new Point Cloud object and an Image Editor that can handle massive images to name only a few updates, Blender has become even stronger in version 3.1. To think that Blender is free and supported by an incredible community of people is nothing short of amazing.

THE VERDICT

8.5
OUT OF 10

BLENDER 3.0/3.1

Blender has become quite the force to be reckoned with in recent times, with this release adding even more features and capabilities. It’s a solid release that caters to recent tech developments and is well worth your consideration.

called Cycles X, artists will be glad that the team decided to not just tinker with the existing code, then ten years old, but to give it a complete re-work from the ground up. Alongside the better algorithms that have been adopted, much of the improvement has come through the changes to the underlying architecture and utilising the capabilities of modern CPUs and GPUs.

Rendering improvements are not just limited to speed and performance though. We’ve been treated to some major improvements in noise-handling too. This has come primarily through an update to the Open Image Denoiser which improves normal passes but also through changes to the Shadow Catcher.

MANAGING ASSETS

Blender 3.0 also saw the introduction of their Asset

Browser which will keep you super organised. By utilising Asset Libraries, Catalogs and Tags you’ll be able to create, access and organise your favourite assets at the click of a button. These assets, which include models, materials, poses and even worlds, can be dragged into the viewport for easy application. If you were organised, you might have kept your assets neatly organised in your own file structure. What benefit is this browser for you? The main upside is that it’s visual and integrates directly into Blender. Once you’ve got used to it you’ll find it speeding up your entire workflow.

Space doesn’t allow for us to mention the countless other improvements such as Geometry Node improvements, changes to Grease Pencil and UI Updates. Version 3.0 was a major step

forward but obviously not a big enough step for the Blender developers. A few months after release we’ve got another update; this time focusing on performance and speed improvements. These tweaks and additions further speed up the artist’s workflow and make the creative process more enjoyable.

A great example of a quicker workflow can be found with the new ‘Copy Global Transform’ add-on. When working with character rigs, artists can now copy the world space transform from one

AUTHOR PROFILE

Mike Griggs

Mike is a digital content creator with over two decades of experience creating VFX and CGI for a wide range of clients. Through design agencies and as a freelancer he has worked on projects for the BBC, the Science Museum, Dynamic Earth and many more. creativebloke.com

+ PROS

Easy-to-use 3D digital content creation application

New dynamics system

Redshift integration throughout the application

New Redshift hybrid render option

ZBrush Remesher technology available within Cinema 4D

REDSHIFT IS NOW INCLUDED WITH CINEMA 4D (SORT OF!)

For the first time, Cinema 4D now comes with Redshift as part of the introductory Cinema 4D pricing. It is worth noting that this is the Redshift CPU option only. To unleash the full speed of Redshift within Cinema 4D, a Maxon One subscription is recommended. This provides a full Redshift licence that enables the Redshift Hybrid CPU and GPU rendering capabilities but now also includes (amongst others) ZBrush and the RedGiant Complete suite of Post FX plugins. It's good value.



SOFTWARE REVIEW

Cinema 4D R26

PRICE £64 / \$84 | COMPANY Maxon | WEBSITE maxon.net

Maxon's Cinema 4D is the mainstay of a global collection of artists and studios who depend on its ease of use and stability compared to its competitors. For many years Maxon let Cinema 4D be what it was – an excellent 3D system with great integration with applications such as Adobe's After Effects, while the team of developers at Maxon worked in the background to update the decades of code to make the most of the power of today's CPUs and GPUs.

SHIFT INTO THE RED

Recently though, Maxon has become one of the movers and shakers in the 3D industry with a range of intriguing software acquisitions, including heavy

hitters such as the 3rd Party GPU render engine Redshift, Red Giant the maker of a range of industry leading Post FX plugins and most recently of all, Pixologic, the creators of the industry-standard

Redshift, for example, even though it has been under the Maxon umbrella for a few years, has never felt fully integrated within Cinema 4D.

Thankfully though, Cinema 4D R26 looks to calm artists'

"CINEMA 4D R26 FEELS LIKE A BREATH OF FRESH AIR, WITH SIGNIFICANT WORKFLOW ENHANCEMENTS"

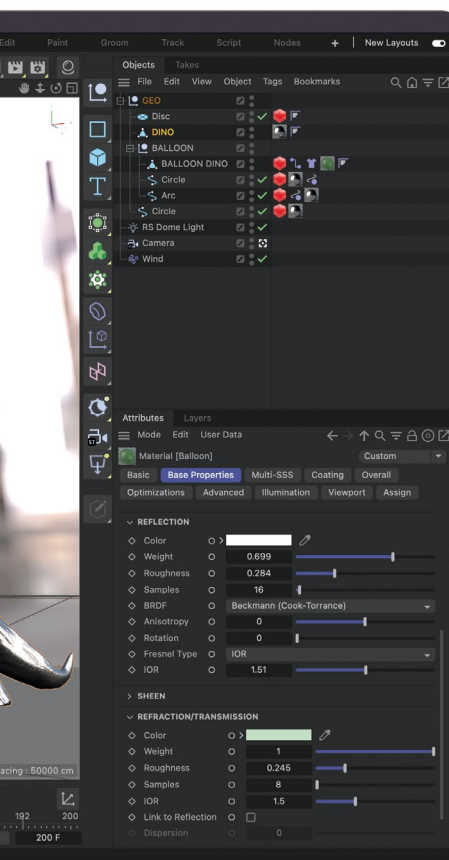
sculpting and modelling application ZBrush.

As these acquisitions have gone on, and even with an extensive UI change with last year's R25, the focus from Maxon on Cinema 4D may be felt to have been slipping.

fears and is the first release of Cinema 4D that feels genuinely like a generational change in a long time.

Redshift is now intelligently integrated within Cinema 4D, as Cinema 4D now assumes that if the render settings

Above: Maxon has integrated a wide range of technologies from its other applications in the Maxon One suite to make Cinema 4D an even more compelling application than ever before. Model supplied by Glen Southern at southerngfx.co.uk



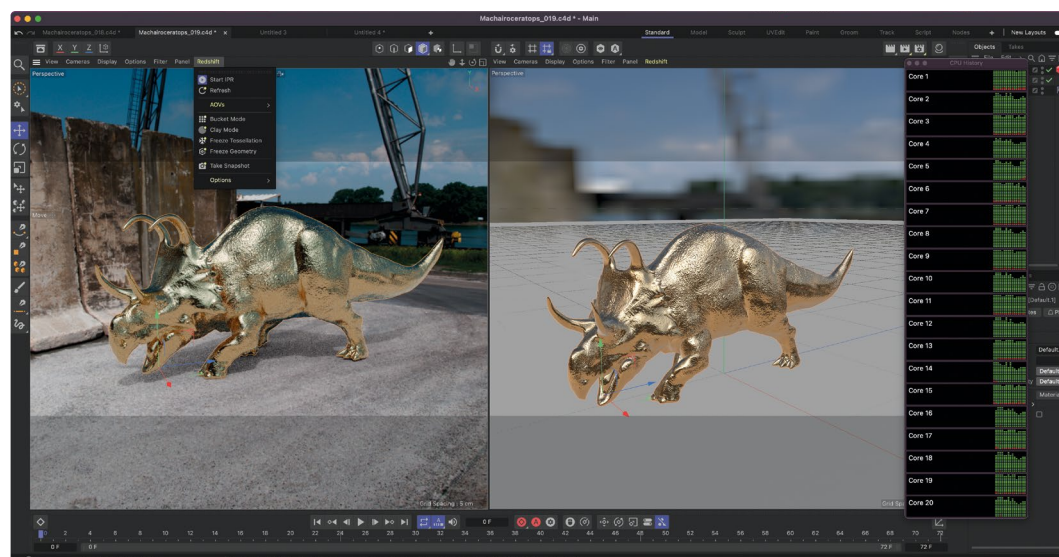
are set to Redshift, that will mean that the artist will want Redshift materials and lights when creating new materials. Also, Redshift materials no longer 'look wrong' or 'black' anymore in the Cinema 4D viewport – they look as they should. It touches like these that make scene management much more accessible.

WHAT'S CHANGED

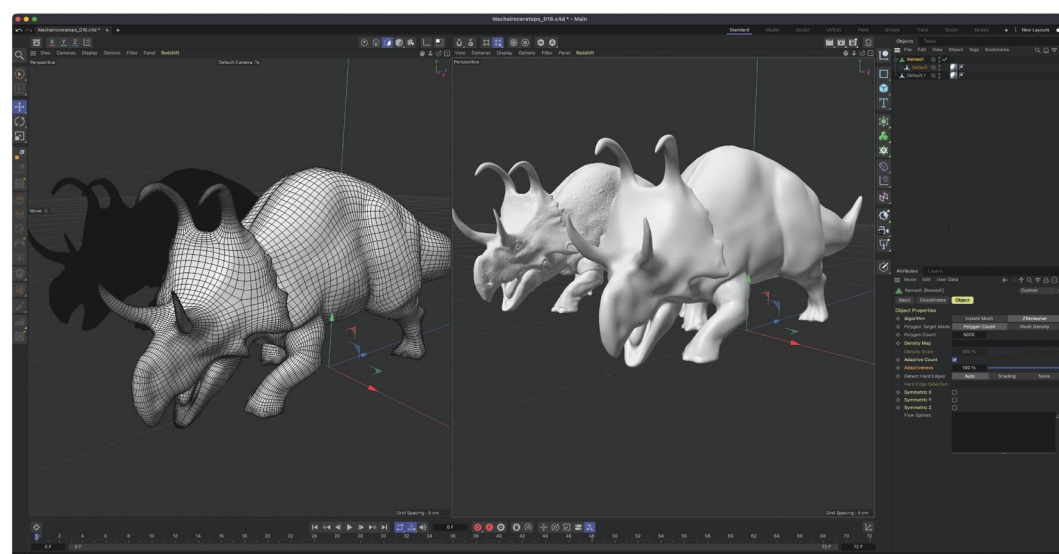
Alongside an upcoming release to allow Redshift to run on AMD Pro GPUs, the main change for Redshift within Cinema 4D is the addition of a Redshift CPU and Hybrid render engine.

While Redshift started as a GPU render engine, the new Redshift can utilise the CPU by itself or in conjunction with the GPU to render scenes. This frees up artists to use computer hardware for Cinema 4D, and therefore makes Cinema 4D's ease of use consistent across both its 3D workflows and for the first time in a long time its preferred render engine of choice.

Speaking of 3D workflows, although it is a recent



Above: Cinema 4D now ships with a version of Redshift, which can run on the CPU. This can enable older workstations to work with Redshift



Above: The ZBrush Remesh is now included directly within Cinema 4D, allowing artists to automatically retopologise complex meshes

acquisition, Pixologic's technology is already appearing directly within Cinema 4D S26. The Remesh Tool now has the excellent ZRemesh technology from ZBrush available as a tool, allowing easy retopology using one of the best remesh technologies without needing to roundtrip to ZBrush.

There are other significant modelling enhancements which enable artists to stay within Cinema 4D for all their content creation needs: 'Tool Fit Circle', which creates a round shape from a square selection, Smooth and Straighten edges, 'Poke Polygons' and 'Even Spacing' are great to have and bring Cinema 4D up to parity with most other content creation applications.

However, the main feature that debuts in Cinema 4D S26 is the launch of a new simulation system for Cloth and Splines, which is the starting point of a whole new dynamics system within Cinema 4D. It boils down to 'Is faster! Easier to use!' as the simulation system can now use the GPU for calculations.

In use, all of the above is true, and dynamic objects are much easier to set up

with options such as 'Balloon' available with a single click. It's the same for Tearing, which works without needing a cloth object and can be dialled in with impressive results.

Cinema 4D R26 feels like a breath of fresh air, with significant workflow enhancements, deep integration with other Maxon products and the initial glance into a new, easier to use dynamics system.

THE VERDICT

9.5
OUT OF 10

CINEMA 4D R26

Cinema 4D R26 is what artists have been waiting for. With features such as a new, faster, and easier to use dynamics system, Redshift is finally feeling integrated as the first party render engine and a great new CPU/GPU rendering option.



AUTHOR PROFILE

Paul Hatton

After graduating with a first-class computer science degree, Paul Hatton has spent nearly two decades working within the 3D visualisation industry.

+ PROS

An easy-to-use renderer

Photo-quality results are achievable

Excels at rendering multiple light sources

- CONS

Lacks some production features available in other renderers

CPU-based so can be hungry on resources

Only available with 3ds Max and Cinema 4D

CORONA SLICER

Many of us will remember years of hard graft creating cutaway renders of our models.

For me it was using the slice modifier in 3ds Max and it seemed nigh on impossible to get impressive results. The Slicer tool within Corona now gives you a way to slice through objects at render time without needing to rely on unpredictable boolean operations.

SOFTWARE REVIEW

Corona 8 for 3ds Max and Cinema 4D

PRICE £235 annually or £34 monthly | COMPANY Chaos | WEBSITE corona-renderer.com



Way back in 2009 Ondřej Karlík was at Czech Technical University in Prague. With a passion for 3D visualisation Ondřej put his incredible talents to good use and created the Corona Renderer. With the help of Adam Hotový and Jaroslav Křivánek they were able to turn this student project into a successful commercial endeavour. In 2017 Chaos came knocking and Corona was acquired and further developed. Its full integration happened earlier this year when it was rebranded to Chaos Corona and was paired with the likes of Chaos Scatter and Chaos Cosmos.

Now at version 8, Chaos Corona continues to build on its core motivation; to deliver a renderer that makes artists' lives easier. Many of Chaos' existing tools that were designed to make visualisation an intuitive pursuit have been fully integrated into Corona. Chaos' acquisition of Corona hasn't damaged its core purpose but has actually enhanced it. A match made in heaven. Let's take a closer look at Chaos Corona 8.

Straight out of the gate we see it being released for both 3ds Max and Cinema 4D. This is the first time they've made Corona available for both packages at the same time. There's not much to add here

other than it brings a welcome consistency for users who make use of Corona inside of both packages. If not, you're unlikely to feel any benefit here.

Let's begin by putting Chaos Scatter under the microscope. This is a powerful tool that enables the scattering of a huge number of objects defined by surfaces, splines and volumes. If you're a Cinema 4D artist then this will be the first time you've seen this tool. The world has become your oyster! Enjoy exploring the countless ways it can speed up your modelling workflow, especially for exterior scenes. 3ds Max artists have had access to Corona Scatter but you'll



All images © Chaos Corona



Below: Scatter objects at will and with high levels of control with the new and improved Chaos Scatter

Left Populate your scenes with render-ready assets quickly and easily

notice some new and improved functionality added in for Chaos Corona. You'll find few downsides to this great tool.

In the mix, for the first time, is the ability to control your scatters based on the steepness of a slope. This feature has been a long time coming but now enables artists to further customise the look of the scatters based on natural phenomenon. The most obvious example of this is where trees don't grow:

generally, on steep cliff faces, but they do grow in the gentler valleys. The other notable addition to Chaos Scatter is the ability to use splines to determine what is and isn't included in your scatter. Chaos Scatter was already a great asset to the renderer but now becomes an even greater force for good.

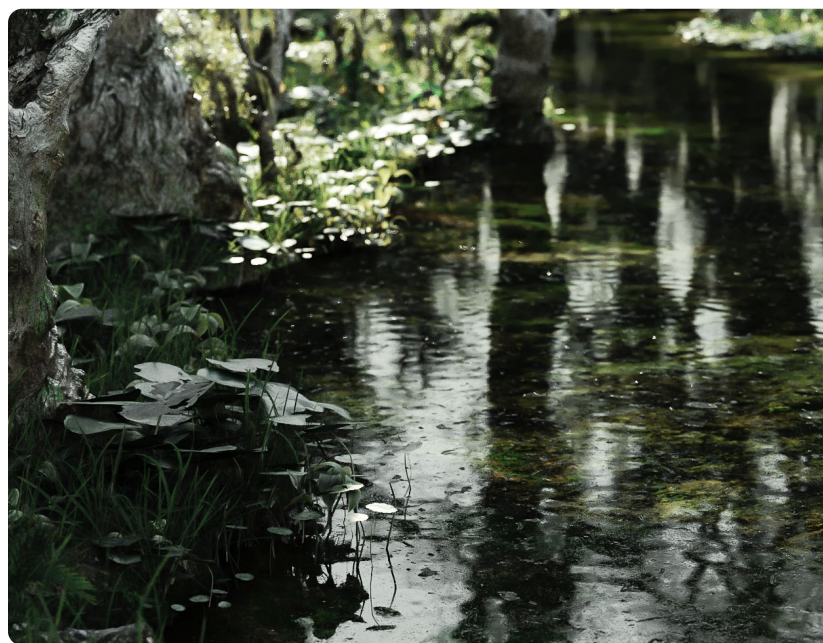
In Chaos Corona you'll now also find Chaos Cosmos. The Chaos ecosystem is getting stronger every year it seems.

"ENJOY EXPLORING THE COUNTLESS WAYS IT CAN SPEED UP YOUR WORKFLOW, ESPECIALLY FOR EXTERIOR SCENES"

Chas Cosmos gives you access to a plethora of top quality, ready-to-render models and materials enabling artists to populate their scenes with speed and ease. This is obviously a win-win for artists who are up against it with deadlines and clients' demands. As a community we'll do well to try and guard against our art all taking on the same form as we'll have access to the same, albeit fairly large, library of assets.

Chaos Corona has worked really hard to release something that will enable artists to go the extra mile in adding much-needed detail to their scenes. This is clear

through the likes of Chaos Scatter and Chaos Cosmos but is also made possible using the new Corona Decal. A decal, in computer graphics, is the addition of something onto the surface of an object. This might be putting a graphic onto a t-shirt or graffiti onto a wall. These types of decals have always been possible utilising layered materials but Corona Decal improves on that workflow, making it easier than ever to not only create but also stack these decals on top of each other. The long-winded process of layering materials has been replaced with a much more efficient solution; a winner for Corona artists.



THE VERDICT

8.0
OUT OF 10

CORONA 8 FOR 3DS MAX AND CINEMA 4D

This release of Chaos Corona is good. It builds upon years of the Corona team delivering a brilliant renderer and with backing from Chaos it continues to go from strength to strength.

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Future PLC
Quay House, The Ambury, Bath BA1 1UA

Editorial
Editor **Rob Redman**
rob.redman@futurenet.com
Designer **Ryan Wells**
Production Editor **Rachel Terzian**

Contributors
Trevor Hogg, Martin Nebelung, Michael Campbell, Mike Griggs, Glen Southern, Antony Ward, Pietro Chiovaro, Paul Hutton

Creative Bloq
Editor **Kerrie Hughes**

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Media packs are available on request
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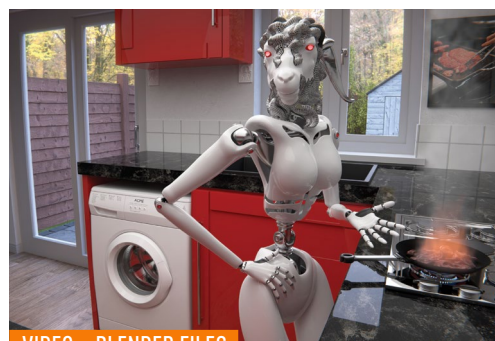
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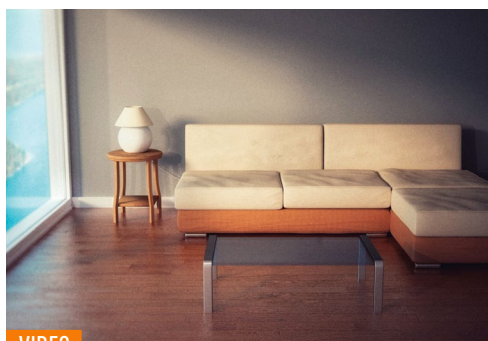
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